

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Gleanings for Bee Culture



VOL. XLII. FEB. 15, 1914, NO. 4.

POLLYANNA THE GLAD BOOK

By ELEANOR H. PORTER, author of "Miss Billy" and "Miss Billy's Decision;" illustrated, cloth-bound, \$1.40 postpaid.

"Enter Pollyanna. She is the most irresistible maid you have met in all your journeyings through Bookland. She is so real that you forget that she is a story girl. After the first introduction you will feel that the inner circle of your friends has admitted a new member. A brave, winsome, modern American girl, Pollyanna walks into print to take her place in the hearts of all members of the family."

Twelfth Printing

Read some of the press comments:

"Pollyanna is the 'gladdest' book that was ever written. It is of more real value than any thousand sermons to which I have ever listened."—*Passaic Daily News*.

"It is a book that charms at once by its style, and delights by its character-drawing and the interest developed by the story."—*The Boston Journal*.

"Pollyanna is a delightful character, and the book refreshingly natural."—*Cedar Rapids Record*.

Premium Offer

Send us two new yearly subscriptions to GLEANINGS IN BEE CULTURE with remittance of \$2.00, and we will send you postpaid as premium a copy of "Pollyanna."

A copy of "Pollyanna" for TWO NEW subscriptions to Gleanings in Bee Culture at \$1.00 each. (See Mr. A. I. Root's write-up of this book) (on page 155 of this copy of GLEANINGS.)

The A. I. Root Co., Medina, Ohio

"falcon" Bee Supplies. Every Thing for the Beekeeper

Take advantage of the early-order discount, send us your list of requirements, and we will quote you our very best factory prices and discounts.

Having recently constructed an eight-car-capacity kiln, and having enlarged our power plant, we shall be able to handle your orders to the best advantage.

"Falcon" Supplies speak for themselves. Don't delay your order, but take advantage of this opportunity and let us ship the goods at your convenience.

Send for our foundation samples and Red Catalog, postpaid.

W. T. Falconer Manufacturing Company, Falconer, New York
Where the good beehives come from

HONEY Bought Sold...

Central Ohio Honey Market

Finest quality WHITE-CLOVER honey a specialty. Producers who have not yet sold their crop should write. Those who have disposed of their crop and are in need of more for their trade, I shall be glad to supply at lowest prices consistent with highest quality and a fair margin of profit.

The correspondence of wholesale and retail dealers is especially solicited, as I am in position to furnish a grade of comb and extracted honey that will suit the most exacting trade. If interested, write for quotations and full description of the line,

Bee Supplies

Now is the best time to place your order for supplies for use next season. The prospect was never brighter, and there is every thing to gain and nothing to lose by ordering before the spring rush is on. Ask for revised price list and early-order discounts.

**Root Quality and Peirce Service
from Ohio's Supply Center**

E. W. Peirce, Zanesville, O.

Airdome Bldg., South Sixth St.

It turns over an important "new leaf" beginning with the January number.

The Guide to Nature Several New Features

"Birds in the Bush," a department edited by Edmund J. Sawyer, with illustrations from original drawings by this talented artist-ornithologist.

"The Fun of Seeing Things," a department for young folks, edited by Edward F. Bigelow, succeeding his well-known work as editor of the "Nature and Science" department of "St. Nicholas" for more than fourteen years.

This new department will be really new. It will not be "schooly," not "nature study," not to induce parents and educators to say, "It is good for the children," but it will appeal directly to the young folks themselves and will help them to enjoy the natural objects that surround them. It will be true to its name.

Subscription \$1.00 a year; single copy 10c. To new subscribers, four months trial for 25c. Address (and make check or money order payable to)

**The Agassiz Association,
ARCADIA:
Sound Beach, Connecticut**

EARLY-ORDER DISCOUNTS WILL

Pay You to Buy Bee Supplies Now

29 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. . . . Write for our illustrated catalog and discounts today.

LEAHY MFG. CO., . 95 Sixth St., . Higginsville, Missouri



HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market price at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES Adopted at Cincinnati, Feb. 13, 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH:

1. *Extra Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white, and not more than six unsealed cells on either side exclusive of the outside row.

3. *No. 1*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2*.—Comb not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR:

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT:

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey, three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY:

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

NEW HONEY-GRADING RULES ADOPTED BY THE COLORADO STATE BEEKEEPERS' ASSOCIATION, DECEMBER 13, 1911.

FANCY WHITE.—Sections to be well filled, comb firmly attached to all sides and evenly capped except the outside row next to the wood. Honey, combs, and cappings white, and not projecting beyond the wood; wood to be well cleaned; no sections in this grade to weigh less than 13½ ounces.

No. 1.—Sections to be well filled, combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey white or very slightly off color. Combs not projecting beyond the wood; wood to be well cleaned; no section in this grade to weigh less than 13½ ounces.

CHOICE.—Sections to be well filled; combs firmly attached; not projecting beyond the wood, and entirely capped, except the outside row next to the wood. Honey, comb, and cappings from white to amber, but not dark; wood to be well cleaned; no section in this grade to weigh less than 12 ounces.

No. 2.—This grade is composed of sections that are entirely capped, except row next to wood, weighing from ten to twelve ounces or more, also of such sections that weigh 12 ounces or more, and have not more than 50 uncapped cells all together, which must be filled. Combs and cappings from white to amber in color, but not dark; wood to be well cleaned.

EXTRACTED HONEY.—Must be thoroughly ripened, weigh 12 pounds per gallon. It must be well strained, and packed in new cans. It is classed as white, light amber, and amber.

STRAINED HONEY.—This is honey obtained from combs by all other means except the centrifugal extractors, and is classed as white, light amber, amber, and dark; it must be thoroughly ripened and well strained. It may be put up in cans that previously have contained honey.

BOSTON.—We quote fancy and No. 1 white comb honey at 15 to 16; fancy white extracted honey in 60-lb. cans, 11. Beeswax, 30.
Boston, Feb. 5. BLAKE-LEE CO..

BUFFALO.—Our local market is well supplied with honey. The market is very quiet, and not any encouragement in sight. Quotations below are for single-case sales. These prices would be shaded in job lots. Fancy white comb honey, 16 to 17; No. 1 ditto, 15 to 16; No. 2 ditto, 12 to 14; No. 1 buckwheat comb, 12 to 14; No. 2 ditto, 11 to 12; white extracted honey, 8 to 10; dark ditto, 7 to 8; beeswax, 28 to 30.

Buffalo, Feb. 7.

W. C. TOWNSEND.

**JUST
OUT!**

New 1914 Catalog--"Everything for Bees"

Lay your plans for the new season now. Send for the 1914 Muth Catalog of Beekeepers' Supplies. It's just off the press. In it you will find full information about the remarkable MUTH SPECIAL Dovetailed Hives. Drop a postal card at once—sure!

THE FRED W. MUTH CO.

204 WALNUT STREET

"The Busy Bee Men"

CINCINNATI, OHIO

P. S.—Ship us your old combs and cappings and let us render them for you. Our process extracts the last drop of wax from the slumgum. This means money for you. Write for full particulars.

SPECIAL DELIVERY

During this month we shall double our usual efforts in points of delivery and service. We carry nothing but the Root make, which insures the best quality of every thing. We sell at factory prices, thereby insuring a uniform rate to every one. The saving on transportation charges from Cincinnati to points south of us will mean quite an item to beekeepers in this territory. We are so located that we can make immediate shipment of any order the day it is received.

New 64-page Catalog

Our new 1914 catalog contains double the pages of former editions and requires extra postage. It is filled from cover to cover with complete lists of goods in every line to meet every requirement of beekeepers. If you haven't received a copy when you read this, be sure to ask for one. It will save you money.

New Features for 1914

Few radical changes have been made this season. It should be noted, however, that we will send out with regular hives, unless otherwise ordered, the metal telescopic or R cover with super cover underneath. The side rail for the bottom-board will be extra length so as to overcome the difficulty experienced by some last season. Improvements have been made in extractors. We shall carry a very heavy stock so that orders may be filled with our usual promptness. Write us your needs. Early-order discount this month 2 per cent.

C. H. W. Weber & Co.

2146 Central Avenue

Cincinnati, Ohio

Gleanings in Bee Culture

E. R. ROOT

Editor

A. I. ROOT

Editor Home Dept.

H. H. ROOT

Ass't Editor

J. T. CALVERT

Business Mgr.

Department Editors:—Dr. C. C. Miller, J. E. Crane, Louis H. Scholl, G. M. Doolittle, Wesley Foster, J. L. Byer, P. C. Chadwick.

\$1.00 per year. When paid in advance: 2 years, \$1.50; 3 years, \$2.00; 5 years, \$3.00.

POSTAGE IS PREPAID by the publishers for all subscriptions in the United States, Hawaiian Islands, Philippine Islands, Guam, Porto Rico, Tutuila, Samoa, Shanghai, Canal Zone, Cuba, and Mexico. Canadian postage is 30c per year. For all other countries in the Postal Union add 60c per year postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old must be given. The notice should be sent two weeks before the change is to take effect.

DISCONTINUANCES. Notice is given just before expiration. Subscribers are urged, if unable to make payment at once after expiration, to notify us when they can do so. Any one wishing his subscription *discontinued* should so advise us upon receipt of the expiration notice; otherwise it will be assumed that he wishes GLEANINGS continued and will pay for it soon.

HOW TO REMIT. Remittances should be made by draft on New York, express-order or money-order, payable to the order of The A. I. Root Co., Medina, Ohio. Currency should be sent by registered letter.

AGENTS. Representatives are wanted in every city and town in the country. A liberal commission will be paid to such as engage with us. References required.

FOREIGN SUBSCRIPTION AGENTS.

Foreign subscribers can save time and annoyance by placing their orders for GLEANINGS with any of the following authorized agents at the prices shown:

PARIS, FRANCE. E. Bondonneau, 120 Avenue Emile Zola.

Per year, postpaid, 8 francs.

GOODNA, QUEENSLAND. H. L. Jones. Any Australian subscriber can order of Mr. Jones. *Per year, postpaid, 6/7 p.*

DUNEDIN, NEW ZEALAND. Alliance Box Co., 24 Castle St. *Per year, postpaid, 6/7 p.*

Contents for February 15, 1914

EDITORIAL	121
Substitutes for Natural Pollen.....	121
Grocers and Honey.....	121
Bees Bred in Cellar.....	122
Adulteration in Germany.....	122
Water for Bees in Mailing-cages.....	122
Hard Candy Melts in Hive.....	122
Editor in Florida.....	123
Shake Method for Foul Brood.....	123
Wintering Experiments in Medina.....	123
Standardization of Supplies.....	124, 128
STRAY STRAWS.....	125
Spraying in Full Bloom.....	125
Workers, Time Needed to Develop.....	125
SIFTINGS.....	126
Beekeepers and Sweet Clover.....	126
Truthful Advertisements.....	126
Requeening Without Dequeening.....	126
BEEKEEPING IN CALIFORNIA.....	127
Robbing, Persistent.....	127
Prospects in California Good.....	127
BEEKEEPING IN THE SOUTHWEST.....	128
Bulk Comb Honey in Winter.....	128
Hives, Size of.....	129
CONVERSATIONS WITH DOOLITTLE.....	130
Peddling Honey.....	130
GENERAL CORRESPONDENCE.....	131
Notes by A. C. Miller.....	131
Germany, Notes from.....	132

Bees Carrying Eggs.....	133
Bee-life in Mountains.....	134
Dangers of American Foul Brood.....	137
Florida, Marchant's Report.....	138
Bees on Brood Foundation.....	139
Water for Bees by Mail.....	140
Candy for Cold Weather.....	141
Swarms Cluster Low.....	142
Farm Beekeeping.....	143
Dealing with Foul Brood.....	144
Feeding in Early Spring.....	145, 147
Oil Cake for Pollen.....	148
Analyses of Foods.....	148
Mustard, where Grown.....	149
South Dakota Convention.....	150
Washington Convention.....	150
Special Section Super.....	151
Black Bees, Good Records from.....	152
HEADS OF GRAIN.....	153
Hard Candy, Making.....	153
Granulated Sugar for Candy.....	153
Heat of Solar Extractor.....	153
Quarantine in Imperial Valley.....	154
Bees Working on Sawdust.....	154
OUR HOMES.....	155
Water-witching.....	157
HIGH-PRESSURE GARDENING.....	158
Dasheens up to Date.....	158
Flying-machines.....	159

Honey reports continued from page 2.

ALBANY.—We can quote only a dull, featureless market for honey this week in both comb and extracted. Prices are nominally what they were in our last. Stock of comb is light, but demand is lighter. Extracted stocks are quite heavy, and prices must favor the buyer from now on. Beekeepers should realize that the time to sell honey is the beginning of the season—September and October—for best and prompt sale. We quote beeswax at 32 cts.
Albany, N. Y., Jan. 24. H. R. WRIGHT.

DENVER.—Our local market is well supplied with honey, and our jobbing quotations are as follows: Strictly No. 1 white, per case of 24 sections, \$2.70; choice, \$2.57; No. 2, \$2.43; extracted white, 8 to 9 cts.; light amber, 7 to 7½. We are in the market for beeswax, and pay 30 cts. per lb. in cash, and 32 in trade, delivered here.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION,
Denver, Col., Feb. 9. FRANK RAUCHFUSS, Mgr.

KANSAS CITY.—The demand for both comb and extracted honey is very light, especially for comb. Receipts of extracted are light, but receipts of comb honey are large. We quote No. 1 white comb, 24 sections per case, \$2.60 to \$2.75; No. 2 ditto, \$2.40 to \$2.50; No. 1 amber ditto, \$2.75; No. 2 ditto, \$2.25 to \$2.50; extracted white, per lb., 8 to 8½; extracted amber, 7 to 8. Beeswax, per lb., 25 to 30.
C. C. CLEMONS PRODUCE CO.
Kansas City, Mo., Feb. 2.

ST. LOUIS.—Our local market is well supplied with honey, and trade has been somewhat quiet on account of mild winter. We are quoting to-day fancy white honey, 15 to 16; light amber, 14 to 15; amber, 12 to 13, and dark amber, 9 to 11. By the case, 24 combs to the case, fancy white brings \$3.25 to \$3.50; light amber, \$3.00 to \$3.25; amber, \$2.50 to \$2.75; dark and broken combs, less. Beeswax, 32½ for prime. Inferior and impure sells for less.

R. HARTMANN PRODUCE CO.

St. Louis, Mo., Feb. 7.

LIVERPOOL.—The honey market is quiet; 100 barrels sold at \$7.20 for pile 1; \$5.88 to \$6.00 for pile 3, and \$5.40 for No. 1 pile. The terms pile X, 1, 2, etc., are used to distinguish the qualities of the honey; for instance, honey, quality pile X, is white in color; pile 1 is white to yellow in color; pile 2 is yellow in color; pile 3 is yellow to brown in color; low pile is fermented honey, etc. Of Chilian beeswax there is no stock here, but the inquiry is good. Value \$37.62 to \$42.48 per cwt., as to quality.

Liverpool, Eng., Jan. 21. TAYLOR & CO...

AS IT IS TO-DAY.

Do you know *The Youth's Companion* as it is to-day—enlarged, improved, broadened in its reach of human interests? You may remember it as it was. You ought to know it as it is now. You will be surprised at what a year's reading of *The Companion* will do for your family. No American monthly magazine offers such a quantity of reading, and it comes weekly, too.

Father can find no better editorial page published. With its impartial comment, its Nature and Science, it will keep a busy man well informed. The Family Page, the Boys' Page, the Girls' Page, and the Children's Page, in addition to eight serial stories and 250 other stories for all the family, suggest the lavish promise for a year's reading, and every line is published with a purpose.

No other American periodical covers the same field of interest or offers such a quantity of reading at as low cost. No other publication furnishes more inspiration or entertainment, or enjoys greater confidence.

If you are not familiar with *The Companion*, let us send you three current issues free, that you may thoroughly test the paper's quality.

THE YOUTH'S COMPANION,

144 Berkeley St., Boston, Mass.
New Subscriptions Received at this Office.

BANKING BY MAIL AT 4%

4 per cent and Safety

for your money. This is what our Banking-by-Mail plan affords you, no matter where you live. The Savings Deposit Bank Company is a conservatively managed institution under strict

State Government Supervision

There is no safer place for your savings, or more convenient, because, when you bank by mail, you can deposit and withdraw money just as easily as though you lived right here in Medina. Let us tell you more about it. Write for free booklet.

THE SAVINGS
DEPOSIT BANK CO.
MEDINA, OHIO

A.T. SPITZER, Pres.
E.R. ROOT, Vice-Pres.
E.B. SPITZER, Cashier.

ASSETS OVER ONE MILLION DOLLARS

How to Keep Bees

BY ANNA BOTSFORD COMSTOCK

This is an excellent book for the beginner. Nothing better. We cordially recommend it to all who are learning beekeeping by their own effort. Having commenced beekeeping three times, the talented author is in a position to furnish the right kind of advice. You can not go wrong in getting this book. It is charmingly written and easily understood. Price \$1.10 postpaid.

THE A. I. ROOT COMPANY, MEDINA, OHIO

Gleanings in Bee Culture

DEVOTED TO HONEY, BEES, AND HOME INTERESTS.

A. L. BOYDEN, Advertising Manager.

Established 1873.

CIRCULATION 35,000.

Issued semi-monthly.

ADVERTISING RATES.

Twenty-five cents per agate line flat. Fourteen lines to the inch.

SPACE RATES. To be used in one issue: Fourth-page, \$12.50; half-page, \$25.00; page, \$50.00.

Preferred position, inside pages, 30 per cent additional.

Preferred position, inside cover, 50 per cent additional.

Outside cover page, double price.

Reading notices, 50 per cent additional.

Cash-in-advance discount, 5 per cent.

Cash discount if paid in ten days, 2 per cent.

Bills payable monthly.

No medical or objectionable advertising accepted.

Column width, 2 $\frac{3}{8}$ inches.

Column length, 8 inches.

Columns to page, 2 (regular magazine page).

Forms close 10th and 25th of each month.

Address Advertising Department, Gleanings in Bee Culture, Medina, Ohio.

Index to Advertisements

AUTOS, BICYCLES

Wagner, W. F.....	8
Mead Cycle Co.....	17
Freeman, W. H.....	7

BANKING BY MAIL

Savings Deposit Bank.....	5
---------------------------	---

BEE SUPPLIES

Blanke Supply Co.....	7
Clemons, C. C.....	8
Falconer Mfg. Co.....	1
Griggs, S. J.....	11
Hunt, M. H.....	11
Jepson, H. H.....	11
Leahy Mfg. Co.....	1
Lewis, G. B.....	12
Nebel, J. & Son.....	11
Peirce, E. W.....	1
Pounder, W. S.....	10
Root, Syracuse.....	9
Stringham, I. J.....	8
Toepperwein & Mayfield.....	24
Woodman, A. G.....	7
Root, Mechanic Falls.....	7

BEES AND QUEENS

Davis, B. G.....	8
Strgar, J.....	8
Marchant, A. B.....	8
Superior Honey Co.....	18

CLASSIFIED ADS.

Bees and Queens.....	20
Help Wanted.....	21
For Sale.....	19
Beekeepers' Directory.....	22
Honey and Wax for Sale.....	19
Honey and Wax Wanted.....	19
Situation Wanted.....	22

Miscellaneous.....	21
Pigeons.....	21
Poultry.....	21
Real Estate.....	19
Wants and Exchanges.....	20

ENGINES

Detroit Engine Works.....	13
Galloway, W.....	18
Witte Ironworks.....	13

FENCES

Brown Fence and Wire Co.....	15
Coil Spring Fence Co.....	15
Kitselman Brothers.....	15
Mason Fence Co.....	13

HONEY-DEALERS

Muth Co., F. W.....	2
Weber, C. H. & Co.....	3

INCUBATORS

Rayo Incubator Co.....	14
Belle City Inc Co.....	14
Cyphers.....	14
Essex, R.....	17
Johnson.....	14

LAMPS

Best Light Co.....	15
--------------------	----

MACHINERY

Bateman Mfg. Co.....	16
1900 Washer.....	23
Straub, A. W.....	13
Planet, Jr.....	cover
Luther Grinder Co.....	17

MISCELLANEOUS

French, R. T. Company.....	8
Stevenot, F. H.....	15
Greider, B. H.....	7

PATENTS

Williamson, C. J.....	11
-----------------------	----

POULTRY-SUPPLIES

Berry.....	17
Mann, F. W.....	17
Neubert, R. F.....	17
Thale, H. H.....	cover

PUBLICATIONS

American Bee Journal.....	12
Bigelow, E. F.....	1

SEEDS AND PLANTS

Allen, W. F.....	16
Berry, A. A.....	17
Burpee, W. A.....	16
Collins, A. J.....	16
Farmer, L. J.....	16
Gardner Nursery Co.....	16
Kellogg, R. M.....	17
Roesch, L.....	17
Scarff, W. N.....	16
Shumway, R. H.....	16
Snell, F. A.....	17
Storrs & Harrison.....	16
Hill, D.....	17

SPRAYERS

Bateman Mfg. Co.....	11
Brown, E. C.....	15
Pratt, B. G. Co.....	15
Rochester Spray Pump Co.....	15

WHEELS

Electric Wheel Co.....	17
------------------------	----

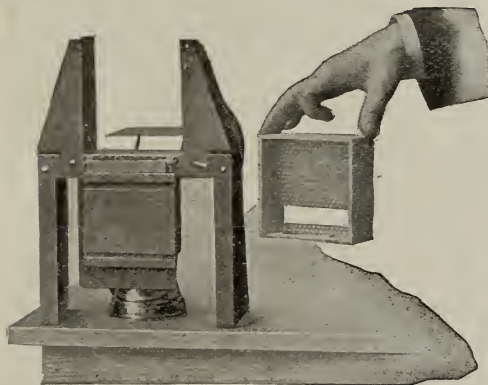
PROTECTION HIVE

The Shallow Metal-roof Cover and the outside rim make a divisible deep cover which can be handled together or in part. They eliminate the chaff-tray nuisance and the heavy bungle-some deep cover in manipulation. The rim holds the overhead packing in winter, and acts as a super protector at other times. This combination is the finest in hive construction on the market to-day.

Dead-air spaces or packing, as you prefer; $\frac{7}{8}$ material in the outer wall. Special circular showing 16 large illustrations will explain all.

Five 10-frame hives like cut, \$13.00.

A. G. WOODMAN CO., Grand Rapids, Mich.



WOODMAN'S SECTION - FIXER

A NEW MACHINE of pressed steel for folding sections and putting in top and bottom starters, all at one handling. A great time-saver, and a good job assured with ease. With top and bottom starter the comb is firmly attached to all four sides—a requirement to grade Fancy. Increase the value of your crop this season by this method. We want every one to try this machine. We guarantee satisfaction. Adjustable to all width— $4\frac{1}{4} \times 4\frac{1}{4}$ or 4×5 section. Model received with much favor by recent Detroit and Chicago beekeepers' conventions. Price \$2.50 f. o. b. Wt. 5 lbs. Send for special circular showing large illustrations.

A. G. WOODMAN CO., GRAND RAPIDS, MICH.



MAKE MORE MONEY FROM BEES

BLANKE'S BEE-BOOK FREE. . .

Johnnie-on-the-Spot Deliveries

When you order Bee Goods you want them "now." We are in the very heart of the Bee Section—no city with so good package-car service—largest stock west of the Mississippi. Whenever possible orders shipped same day as received—more carefully packed than ordinary.

BLANKE'S BEE BOOK FREE—a catalog filled with helpful tips for either beginner or old timer. . . Write to-day before you need supplies.

Department 2

Blanke Mfg. & Supply Co.
St. Louis, Mo.

G. B. Lewis Co. Make of Beekeepers' Supplies at Factory Prices

Satisfaction guaranteed, or your money refunded. . . Liberal discount for early orders. Special to new customers. Please drop me at once a card for our catalog.

W. H. Freeman, Peebles, Ohio.

When Ordering Supplies

remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and Grand Trunk. Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Maine
J. B. MASON, Manager



GREIDER'S FINE CATALOGUE
and calendar of pure-bred poultry for 1914, large, many pages of poultry facts, different breeds in natural colors, 70 varieties illustrated and described; incubators and brooders; low price of stock and eggs for hatching. A perfect guide to all poultry-raisers. Send 10c for this noted book.
B. H. GREIDER, Box 50, Rheems, Pa.

GOLDEN ITALIAN Queens

Reared from straight five-band mothers, mated with select golden drones, $3\frac{1}{2}$ miles from three-band apiary. These queens are large, vigorous, and prolific; the bees gentle and hustlers, and are noted throughout the U. S. as a disease-resisting strain. Purity of mating, safe arrival, and satisfaction guaranteed.

. QUEENS	May 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested	\$ 1.25	\$ 6.50	\$11.50	\$ 1.00	\$ 5.00	\$ 9.00	\$.75	\$ 4.00	\$ 7.50
Select Untested.....	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Breeders, \$5.00 to \$10.00.

Queens for export will be carefully packed in long-distance cages, but safe arrival is not guaranteed.

BEN G. DAVIS, SPRING HILL, TENNESSEE

Special Sale of Honey

WE HAVE produced a fine lot of extracted honey this season from our eight out-yards. In addition to our own honey, we have purchased many other lots from prominent producers, and are now able to offer for prompt shipment the following flavors of extracted honey:

ALFALFA,	ORANGE,
SWEET CLOVER,	LIGHT AMBER,
WHITE CLOVER,	DARK AMBER,
BASSWOOD,	BUCKWHEAT.

Several of the last cars of comb honey which were shipped us in 1913 contained a large number of cases of broken comb honey, caused by the cars being badly handled in transit.

We are obliged to regrade all shipments; and in every case where we found broken combs we melted them up. All the combs that are slightly cracked or have the cappings broken, we put into other cases; and these cases of cracked comb honey, which is practically all produced from white clover, we are offering at a special low price and at prices which we believe will certainly be of interest to you; and we know that, if you will send us in an order, you will be pleased with the honey at the prices we are asking for it.

We have other choice grades of Fancy and No. 1 white comb honey, as well as Fancy and No. 1 amber comb honey, and during these months we are making special prices to our regular trade.

A request will bring special prices.

The A. I. Root Co., Medina, O.



BUY CARNIOLANS IN CARNIOLA

Pure Carniolan Alpine bees. Write in English for booklet and Price list. . . Awarded 60 honors.

JOHANN STRGAR, . . Wittnach
P. O. Wocheiner Feistritz, Upper
Carniola (Krain), Austria

This is the season for discounts on Bees and Bee Supplies

If you will send us a list of goods needed we will be pleased to quote you on them. Catalog free.

I. J. STRINGHAM, 105 PARK PLACE, NEW YORK
Apiaries, Glen Cove, L. I.

Marchant's Island Bred Queens

Bred from selected mothers, and mated to isolated drones of a different strain. My aim is quality and not quantity. So if you want any of these choice purely mated queens order now or you may not get them as I am going to rear only a limited number. No disease, and your money back if not satisfied. The A. I. Root Co. use my queens, which is proof of their quality.

No need to write for lower prices.

Reference, The American Exchange Bank of this city.

Prices—Untested, single, \$1.50; 6 for \$6.00; 12 for \$10.00; in lots of 25 or more, 75 cts. each. Select tested, \$3.00. Breeders, \$5.00 and \$10.00.

A. B. Marchant, . . Apalachicola, Florida

AUTOMOBILES!

500

USED AUTOS

Guaranteed by the owners.
Write for list.

Wm. F. Wagner Auto Garage
Massillon, Ohio

BEE SUPPLIES Send your name for new 1914 catalog out in January. Dept. T, C. C. CLEMONS BEE SUPPLY CO., Kansas City, Mo.

FRENCH'S

THE ORIGINAL POULTRY MUSTARD IN AMERICA

Write to us for information.
Booklet and circulars free.

THE R. T. FRENCH COMPANY, Mustard-Makers
ROCHESTER, N. Y. Department D.

Beeswax Wanted!

We Expect to Use
SEVENTY TONS

of beeswax during the next **SIX MONTHS**, and we have on hand less than twenty tons. We offer for good average wax, delivered at Medina, 32 cts. **CASH**, 34 cts. **TRADE**. If you have any good wax to sell write to us or ship it by freight. Send us shipping receipt, giving us gross weight also net weight shipped. Be sure to mark your shipment so we can identify it when received.

Beeswax Worked into Foundation

If you want your wax worked into foundation we are prepared to do this for you at prices equal to those made by other standard manufacturers. Write for price if interested.

The A. I. Root Co., Medina, Ohio

Are You Interested.....

In securing a crop of honey this coming season? Send us your name and address for 1914 catalog, and make selection of the hive and appliances. You should have a good year if you are prepared as the honey yield begins.

The A. I. Root Co., Syracuse, N. Y.
1631 West Genesee Street

"If goods are wanted quick, send to Pouder."

ESTABLISHED 1889

Bee Supplies

Bees in this zone are in winter quarters with a bounteous supply of natural winter stores, and I believe that no other feature is quite so important as regards safe wintering as an abundance of wholesome stores. The fall flow was so profuse that in some instances brood-rearing was curtailed early on account of crowded condition, and some strong colonies were weakened on this account. A few losses may result from this condition. The white clover in this zone is in good condition with the exception of a few counties which suffered from drouth. Conditions for ensuing year are very encouraging for both beekeeper and the supply-dealer. The last year will be remembered as a most excellent honey year, and with it came the best demand for honey that has ever been known. I am receiving more inquiries and orders for Root Bee Supplies than ever before during midwinter, and some discounts for early orders are still available. The policy of this house as to prompt shipments and a fair and satisfactory deal will be maintained as heretofore, and I hope to deal with you in a way that will justify your recommending my goods to your neighbor.

WALTER S. POWDER:—*I am more than pleased with your promptness. Kentuckians are generally credited as being quick with a gun, but I do not think the fastest in that line can equal the speed a certain Indiana man uses in shooting out the goods. Those paper honey-jars are certainly the trick for local trade.*

Louisville, Ky.

Yours truly,

OTTO F. RECKTENWALD.

I should like to place in your hands my catalog with 1914 revised prices on bee supplies. Or send a list of your requirements, and let me see if I can not create a saving for you by quoting an estimate. This will place you under no obligations, and it will be one of my pleasures.

I can use more beeswax, and am now paying 31 cents cash or 33 cents in exchange for goods.

Walter S. Pouder
873 Mass. Ave., Indianapolis, Indiana

Hives-- The Buckeye chaff hive,
The Root Dovetailed hive,
The Danz. comb-honey hive.

Sections - - All sizes and all "Root Quality."

Foundation - The Root-Weed process (It's the best)

Beeswax - - We want it; top market price paid.

Berry-baskets-Let us quote you prices on them.

Send for 1914 Catalog

M. H. HUNT & SON, 510 No. Cedar St., Lansing, Mich.

2
Per Cent
Cash
Discount
During
February

PATENTS

25
YEARS'
PRACTICE

CHAS. J. WILLIAMSON, McClachlen Building, Corner
Tenth and G Sts., WASHINGTON, D. C.

Patent Practice In Patent
Office and Courts

Patent Counsel of
The A. I. Root Co.

Are Your Bees Short of Stores?

We have candy in large paper pie-plates
just right for late winter and early spring
feeding. Write for prices.
We carry a full line of supplies at all times.

H. H. JEPSON

182 Friend Street

BOSTON, MASS.

INCREASE Your SALES

... By a Liberal Distribution of Our Booklet ...

THE USE OF HONEY IN COOKING

The 1913 edition is ready for distribution, and may be
had in quantities at reasonable rates. The back cover
page affords space for a display advertisement. As this
booklet contains no advertising whatever, it can be
employed with telling effect. Better order your supply
early. Sample and prices in quantities on application.
Fifty-eight pages; one hundred and twenty-two valu-
able recipes in which honey is used. Just the book for
every household. A two-cent stamp will bring a copy.

Address the Publishers

THE A. I. ROOT COMPANY, MEDINA, OHIO



Beekeepers' Supplies

Our 1914 64-page catalog
ready to mail you free. . .
Can make prompt shipment
of regular-stock goods, as
we have a good supply of The A. I. Root
Co.'s goods on hand. The rush season will soon
be on hand. Our freight facilities are good.
Small packages we can rush through by parcel
post. Express rates are much lower now also.
Let us quote you. Let us hear from you. Bees-
wax taken in exchange for supplies or cash.

JOHN NEBEL & SON SUPPLY CO.

High Hill, Montgomery Co., Mo.

"Griggs Saves You Freight"

TOLEDO

"Griggs Saves You Freight"

New goods arriving permits us to fill orders same day as received, and this,
with direct lines to your door and low freight rates, makes TOLEDO the
best place to order your goods from.

Our NEW ILLUSTRATED CATALOGS for 1914 are here and being mailed
out. Send your name for one.

Send us list of goods wanted and receive our SPECIAL PRICES for quan-
tity orders. BEESWAX is in great demand. Send it in now. We pay 32c
cash, 34c in trade. Shoot it in.

S. J. GRIGGS & CO.,

26 NORTH ERIE STREET,

TOLEDO, OHIO

"Griggs is Always on the Job"

When You Buy Lewis Beeware

. . . You Get . . .

LEWIS QUALITY.—Which means that all Lewis Hives are made out of clear white pine, and Lewis Sections made out of fine white basswood. Material in these goods is the best obtainable, selected by experts.

LEWIS WORKMANSHIP.—The Lewis Factory is equipped with the latest improved machinery, constantly watched over by experts. The Lewis head mechanic has 36 years of bee-supply experience; the superintendent of bee-hive department 30 years; the superintendent of sections 29 years. These and many other skilled men have a hand in all the Lewis goods you buy.

LEWIS PACKING.—All Lewis Beeware is carefully and accurately packed—a patent woven wood-and-wire package made only by the Lewis Company is employed largely in packing; this makes the package light, compact, and damage-proof.

LEWIS SERVICE.—Years ago all goods were shipped direct from the factory with attending high freight-rates and delays during the honey season. NOW Lewis Beeware can be obtained almost at your own door. Over 30 Distributing Houses carrying Lewis Beeware by the carload are dotted all over the United States and foreign countries. Write for the name of the one nearest you.

Our New 1914 Catalog is Now Out. Send for One

G. B. LEWIS CO., Manufacturers of BEEWARE **Watertown, Wis.**

HAVE YOU SEEN IT?

. . . THE . . .

NEW American Bee Journal IT PLEASES

Allow me to congratulate you on the improvement of the *Journal*. It certainly hasn't lost anything in changing hands. I noticed at the Des Moines convention many spoke encouragingly of the way the paper has been handled since the Dadants got it. You can "count on me."
Center Junction, Iowa. W. S. PAUGHBURN.

NEW Editor NEW Cover NEW Manager

Select Material

Illustrated

Free Sample Copy

\$1.00 a Year

C. P. DADANT

DR. C. C. MILLER

American Bee Journal, Hamilton, Illinois

Cleanings in Bee Culture

Published by The A. I. Root Co., Medina, Ohio.

H. H. ROOT, Assistant Editor.

E. R. ROOT, Editor.

A. L. BOYDEN, Advertising Manager.

A. I. ROOT, Editor Home Department.

J. T. CALVERT, Business Mgr.

Entered at the Postoffice, Medina, Ohio, as second-class matter.

VOL. XLII.

FEBRUARY 15, 1914

NO. 4

Editorial

INDICATIONS for another good honey year are exceedingly favorable throughout the country. Snows and rains have put the soil in fine condition for the clovers. Abundant rains in California practically assure a sage crop.

A NEW WAY OF MAKING BEE-CANDY FOR WINTER FEEDING.

IN this issue, p. 141, our correspondent, Mr. A. V. Small, calls attention to a very simple and what we believe to be a very feasible plan for making bee-candy for winter feeding. We hope some of our readers whose colonies may be running short will make a trial and report.

SIMPLIFYING OUR NOMENCLATURE.

THE suggestion comes from Dr. Miller, through the Dadants, that in the future we write the words "foul brood" as one word, "foulbrood." We entirely agree with the suggestion; and the very fact that we have made as one word for the last two years such words as beehive, beehouse, beekeeper, beekeeping, beemaster, beekeeping, and beeswax, consolidating them as one word, makes it easy for us to adopt foulbrood.

FURTHER PROSPECTS IN CALIFORNIA.

REPORTS continue to come in telling of the amount of rainfall in California. The number of inches varies according to the particular locality, of course, but there is no doubt that prospects on the coast are brighter at this time than they have been for a good many years. Most of the rain, too, has "soaked in." The following from C. H. Clayton, at Los Angeles, is indicative of the tenor of the reports in general.

We are having fine growing weather—as fine as we have even seen at this time of the year. Last year at this time we had 2.95 inches of rain. This year to date we have had over 15 inches.

ARTIFICIAL SUBSTITUTES FOR NATURAL POLLEN.

SEVERAL schemes have been proposed for supplying the bees with pollen artificially when the natural article is not available by reason of peculiar weather conditions or the scarcity of the sources of supply. Some

progress is being made, but we should be glad to get reports from others who have discovered means by which we can make our bees rear brood on artificial substitutes in the cellar, or outdoors* when the weather is inclement.

OUR COVER PICTURE.

THE view shown on the cover of this issue shows one end of the apiary of J. A. Nininger, of Nickerson, Kan. Mr. Nininger writes that the picture was taken in the fall of 1912, at which time there were 39 colonies that had averaged about 50 pounds of comb honey each. The honey was mostly from alfalfa, which, together with smartweed and heartsease, are the principal honey-plants in the locality. The smartweed honey is dark and strong, but there are some who will have nothing else if they can get it. The flow commences about the last of July or the first of August. The colonies build up on it in fine shape for winter.

Ten-frame hives are used throughout. The high stack of supers shown are extracting-supers set over a hive for the bees to clean up.

The colonies are wintered on the summer stands; but a super is put on filled with packing material, then several thicknesses of newspaper are wrapped around, and tarpaper placed over the whole. During the winter of 1911-12 the cold was very severe, the thermometer registering 24 below zero. There was considerable snow, however, which was in the bees' favor. All came through in good condition and built up early in the spring with the exception of two colonies which had no protection. More than twice the average number of bees had died in these two colonies.

THE VALUE OF HONEY RECOGNIZED BY WHOLESALE GROCERS.

WE note with pleasure that the large wholesale grocers in the country are beginning to recognize the peculiar valuable features of honey as a food as they never have before. Many of them are making special displays, and are featuring honey as it deserves to be featured, instead of letting

it sell itself in a haphazard way as is so often the case.

In a large catalog of the wholesale grocers, Acker, Merrill & Condit Company, sent us by one of our subscribers, J. M. Thore, there are articles written by experts along the various lines describing the different articles of food, how made, etc. The article on honey is ably written by one who knows not only the science of honey, but how to write of it in an interesting way. Mention is made of the well-known fact that honey may be eaten safely by many persons who dare not eat sugar. The article ends with several good recipes using honey in making cakes, puddings, etc.

ALWAYS SIGN YOUR NAME TO CONTRIBUTIONS.

QUITE a number of our subscribers when asking questions or sending in an article for publication do not sign their names, but sign instead "Subscriber" or "Beekeeper." We are able to answer in GLEANINGS only a small part of the questions that we receive. We reply to the rest by letter; and if no name is signed we are helpless unless it so happens that there are no other subscribers at the particular postoffice indicated by the postmark. Furthermore, we are frequently obliged to write for more particulars before an answer can be given in GLEANINGS; and if the name is not given we are put to considerable inconvenience, and many times we can simply hold the communication awaiting another letter, possibly a complaint, later on. If for any reason you do not wish your name to appear in case your letter is published, simply mention the fact and your wish will be complied with.

"Subscriber" at Brooksville, Ky., will find the Miller smoke method of introducing fully described on page 370 of the June 1st issue for 1913.

THE HARD CANDY SOFTENS AND MELTS IN THE HIVE.

THERE have been two reports of the hard candy made according to the directions in our January 1st issue softening when placed over the combs to such an extent that it melted and ran down, killing bees. We have made and used quite a large quantity of this candy, and we have had very little trouble, although this year (see editorial elsewhere) it has seemed softer than usual. It is likely that the conditions within the hive have a great deal to do with the consistency of the candy after it is placed over the combs. If the air is heavily charged with moisture the candy absorbs water more easily than in another hive where the air is drier. However, perhaps it may be well to reduce

slightly the amount of honey used. Instead of one pint of honey to twenty-five pounds of sugar as specified in the January 1st issue, perhaps one pint to thirty-five or forty pounds of sugar would be safer. If no honey is used at all the cake is likely to assume a granular form so that much of it is wasted.

CONDITIONS FOR CELLAR BREEDING.

IN order to get bees to breeding the temperature in the cellar must be warmer than is customary for orthodox wintering. The bees must be disturbed more or less, and fed continually. Candy of the right kind is better than a syrup or sealed stores in the combs. Higher temperature, disturbance, and continuous feeding are necessary for brood-rearing. It is understood, of course, that there should be pollen in the combs. Without a nitrogeous food there will be no brood-rearing.

Caution.—The average beekeeper should try out cellar breeding on a small scale. Try a few colonies first. If you succeed with these try more another winter. It has its dangers, and before one can succeed with it he must have experience, and some of it of the kind Josh Billings tells about.

A NEW OLD SCHEME FOR GIVING BEES WATER IN MAILING-CAGES.

WE believe that the method of giving bees water when shipping them long distances by mail is going to solve the problem of sending bees across continents, and perhaps around the world. We expect to give our new method a thorough test from Apalachicola this winter. Illustrations of the new scheme will be given later. The reason why we feel optimistic is because Mr. A. I. Root, some thirty years ago, tried out almost precisely the same thing, and he demonstrated beyond a question that it was a success. But the Good candy he used at the time caused him to abandon the water-bottle scheme for candy. It is rather funny now that we are discovering at this late date that the water-bottle scheme is a practical necessity.

Our experiments last summer were not entirely satisfactory, in that our water-containers had a fashion of leaking and wetting down the candy before the bees arrived at their destination. The new containers we have devised make this practically impossible.

ADULTERATION IN GERMANY.

OUR correspondent from Germany, in this issue, page 132, calls attention to the immense quantity of adulterated honey that is sold in that country. The beekeepers of the

United States can hardly appreciate the great benefits we are enjoying under our national pure-food law supplemented by our State laws. The adulteration of honey here has practically ceased.

The same correspondent, on page 133, says, "Chemists to-day have no method by which adulteration may in all cases be proven." That may be true in Germany, on account of the diversity of sources from which their honey is gathered; but it is not true in the United States. Any packer is taking a long chance if he adulterates honey in this country.

We especially recommend that our German brethren get busy and secure a national pure-food law; and, when once enacted, we feel satisfied their chemists will be equal to the occasion. Germany has men of science who are second to none; and if they can not detect *all* species of adulteration it is because they have not given the matter attention on account of a lack of a pure-food law.

E. R. ROOT'S TRIP TO FLORIDA.

We are just leaving for Baltimore to take the boat for Jacksonville. After spending a couple of days at that point we shall go direct to Apalachicola where we have 300 colonies of bees, arriving there between the 16th and 17th. We shall remain at that point for three or four days, when we shall go to Bradentown, where A. I. Root is, arriving there the 21st or 22d. We shall remain in Bradentown for two or three days, when we shall go to Stuart, Fla., and from there go with Mr. W. A. Selser. We expect to spend two or three days at that point, visiting the territory in Mr. Selser's launch. We will go on to Palm Beach, then take another launch for a cruise of five days down to the Keys, stopping at Pompana and Miami. We expect to return to Medina about March 10.

We shall be accompanied by Mr. Geo. M. Gray and wife, of Fostoria, old college mates; and while *we* go on business and pleasure, *they* will seek pleasure only.

Our purpose in going south at this time is to see what our bees on the Apalachicola River are doing, and to determine whether the scheme of moving a carload of bees south to that point will prove profitable. So far, our Mr. Marchant reports that every thing is coming out according to schedule. Just how many bees we shall bring back—well, we will not say now. Let the future tell.

Our purpose in visiting the extreme southern part of Florida is to determine whether it will be possible to establish a queen-rearing yard that can be maintained the year

round, supplying queens any month of the year.

Of course, we shall be supplied with cameras, and our readers shall have the benefit of our investigations. Soon after E. R. Root returns, H. H. Root will go down to Apalachicola to be present during the extracting season.

THE MODERN SHAKE METHOD OF CURING FOUL BROOD DEFECTIVE.

The ordinary modified McEvoy method for curing foul brood in brief involves the process of shaking or brushing bees from diseased combs on to frames of foundation in a clean hive. Mr. A. F. Wagner, in this issue, page 137, calls attention to the fact that such treatment will result in bees swarming out in many cases. Our own experience and observation, as well as reports from others, confirm the statement. In some cases it means the loss of the colony, and perhaps in others the danger of spreading disease to a bee-tree or another hive.

Quite a number of our correspondents, including Mr. Wagner, to avoid this swarming out have suggested leaving in an old comb temporarily as a bait to hold the bees, or, as Mr. Wagner suggests, putting in a single frame with a starter in the diseased hive; and after the bees have drawn it out, and filled it with honey, remove all the combs and substitute frames of foundation, leaving the first frame as a bait to hold the bees. To shake or brush the bees into an entirely different hive on frames of foundation is such a radical change of environment that swarming out is very apt to occur, especially if the treatment is administered during the middle hours of the day; and even when practiced at night we have noticed that the bees will often swarm out the next morning. While we do not believe that such bees when they swarm out carry infection to other hives, there is a possibility of it, especially where the act of shaking causes them to gorge themselves with diseased honey—honey that they may hold for a day or two until they get into their permanent quarters. We believe the time has come when the orthodox treatment for American foul brood should be modified in such a way that there will be no danger of absconding.

OUR WINTERING EXPERIMENTS AT MEDINA; FEEDING HARD CANDY.

We are wintering our northern bees in two cellars. Those in the warehouse cellar are being wintered along orthodox lines. The temperature is maintained at about 45 degrees without disturbance or feeding.

Many of the colonies in the upper cellar are being fed dry hard candy, and breeding has been going on rapidly; but, unfortunately, the candy this year had too much honey in it. (See editorial elsewhere.) Some of it, and we might say much of it, has been so soft that it ran down on the bees. Fortunately, we discovered it before much damage had been done. But the extreme softness of the candy caused the bees to consume more than was needed for brood-rearing, with the result that signs of dysentery began to show on some colonies. Fortunately we had three or four days of warm balmy weather when the bees were taken out of the cellar and given a nice flight. The soft candy was removed, and in the mean-time breeding had progressed very satisfactorily in most colonies. While the bees are still outside, they will be put inside to avoid the threatened blizzard. More anon.

We asked our Mr. Mel Pritchard, who has worked our basswood beeyard for some years, how much brood-rearing he had noticed in the hives in and out of the cellar for years back. We remarked that some skepticism had been shown to the effect that cellar breeding would result in disaster. "That is a joke," said Mr. Pritchard. "For years and years I have noticed brood in hives in the cellar, sometimes in January and February. This brood hatched out, notwithstanding the colonies had had no flight until they were set out in April."

We have ourselves observed that breeding continues in our cellars. Once or twice we have noticed that our cellared colonies have come out stronger than when they went in. Two years ago this present winter after it turned so cold we put our Carniolan apiary in our machine-shop cellar in midwinter when it was bitter cold. We placed this yard inside because the colonies were so weak that we knew they would not survive a month outdoors. When we took them out in the spring they were very strong, and the only lot of bees that severe winter that wintered well, while the outdoor bees were weak and dwindling.

STANDARDIZATION OF BEEKEEPERS' SUPPLIES.

A COUPLE of years ago Dr. Burton N. Gates, President of the National Beekeepers' Association, called attention to the variation in our standard hives and frames as put out by manufacturers throughout the country; that under present conditions the beekeeper was almost under the necessity of continuing with the same style of goods with which he started.

An effort is being made on the part of manufacturers to standardize goods. For example, more and more the manufacturers

are adopting the same styles and sizes of shipping-cases. In years gone by, the multiplicity of sizes and styles was most confusing to the beekeeper, and expensive for the manufacturers and dealers to maintain. Now the styles and sizes have been reduced to a very few; and it is to be hoped that the time will speedily come when the beekeeper can buy shipping-cases anywhere, and have them match those he already has on hand. More and more the novelties in hive construction are being eliminated. The tendency is most decidedly toward the simple ten-frame Langstroth hive, without portico. Bottom-boards are plainer and stronger, hive-covers are becoming less numerous in design, and the something-new-under-the-sun hive or hives have all but disappeared. 'Tis well.

Incidentally, we believe that the plan suggested by Charles Howell, page 151, will do away with one of the odd-sized sections, namely, the $4\frac{1}{4} \times 4\frac{3}{4}$. We see no objection to the plan—on the contrary there are certainly many advantages. The springs, if they are too stiff, must be weakened by being bent backward somewhat; otherwise the top-bar will be bowed up out of line.

At the present time there are the ten and eight frame hives, both of which require a complete layout of supers, escape-boards, honey-boards, covers, and bottoms. If the ten-frame hive becomes the standard it will mean a large saving to the manufacturer and dealer as well. Just a few years ago the majority of hives sold were the eight-frame. Now the ten-frame outnumbers the former nearly three to one.

Mr. Louis H. Scholl has something to say about standardization of hives and fixtures; and on this subject he says in this issue, p. 129, "My own experience has taught me that, on the average, a colony in a ten-frame hive is usually just so far ahead of one of eight-frame capacity as the difference made by those two extra frames after the combs are built out."

The day is not far distant when the eight-frame will be eliminated. The twelve-frame hive may have some advantages, but it is too heavy for the average person to lift. If a larger capacity is needed, it can be easily secured by means of an upper story with half depth or full depth. The ten-frame hive may be made a fifteen-frame or twenty-frame capacity by tiering up with the great advantage of having a unit of such a size that an ordinary man can lift it. The sixteen-frame hive, for example, would require two men to handle it; and in these days of outapiary work and moving bees, the unit of hive construction should be of such a size that an ordinary man can handle it.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

NOTABLE is an ad. in the Swiss bee journal of a hotel and sanatorium desiring to buy honey. Our hotels haven't got up to that yet.

WALTER S. POWDER's package for sending candied extracted by post leaves nothing to be desired unless it would be to take an inch from its height and add a trifle to its diameter.

THE uncapping-fork, claimed to be better than the knife, has not yet got this side the ocean, and now comes an ad. in *Schweizerische Bztg.*, by J. Arter, offering an uncapping-plane claimed to be better than knife or fork. Price \$1.68.

I'M asked to give in detail the different steps that led to last summer's crop. If I were to do that in full it would take up too much space in GLEANINGS. Besides, I've given it all already, for we followed exactly the plans given in "Fifty Years among the Bees."

LATELY I was told I'd change my mind about paint on hives when I learned that the inside of a hive is coated with impervious propolis. Well, I'll quote my answer from my good friend of so many years, G. M. Doolittle, who says, p. 49, that the glued surface is "sufficiently porous." I wonder what would be said if I should bring good authority for the statement that enough moisture goes through the propolized inside of a hive to raise blisters on the outside painted surface.

"THERE is nothing special in the 'red-clover' strain, as all hive bees can work the second crop of this plant, although it is impossible for them to work the first," says the editor of the *British Bee Journal*, p. 450. Has that able authority been caught napping, or are things so very different under the British flag? On this side it is a rarity for hive bees to work on the second crop of red clover, yet there have been strains in which there was something decidedly "special," and they would work on second-crop red clover when other bees neglected it. Alas that it is so difficult to continue such strains!

"THE most important spraying was done when the petals showed first signs of falling," p. 94. That's given apparently with commendation; but at this distance it looks like spraying in *full bloom*. I'd like to know what Prof Surface thinks about it. [We were present when Van Rensselaer & Southam sprayed their trees. As Mr. Van

Rensselaer states, one of the sprayings was applied when the petals showed the first sign of falling. There may be a question as to this procedure. But we had about fifty colonies in the orchard at the time. The bees were not working on trees where the first petals began to fall, the presumption being that nectar is no longer secreted; and Mr. Van Rensselaer stated there were no bees on such trees. We lost no bees, and made good increase at that yard. On the other hand, there is just a little danger that less experienced fruit-growers might do a fearful amount of damage by spraying when the first petals begin to fall. We shall be glad to hear from Prof. H. A. Surface on the point.—Ed.]

ALLEN LATHAM thought the orthodox 21 days was too much for the development of a worker. Didn't say why—just thought so. I thought I'd refer the matter to the bees. I gave an empty comb to a queen Aug. 5 at 3:05 P. M., and took it away at 5:05. As it was the only comb she had, I could be sure the last eggs in it were laid just before 5:05. Then by watching when the very last young workers emerged from their cells I could know exactly what the length of the time was in that particular case. Aug. 25, at 11:55 A. M., I thought I would see how much unhatched brood was still left. Would you believe it? There wasn't a bee left in a cell! So I was too late too find out just how long it was from the laying of the egg to the emergence of the last bee. But this much I do know: that in this particular case the full time for the development of a worker-bee was inside of 19 days 18 hours 50 minutes, and how much inside I don't know. Don't tell me there was some mistake. The top-bar of that frame was plainly marked "XIX," and I can't see any chance for mistake. Likely enough the 21 days was got from a nucleus, while I operated with a full force of bees and in hot weather. I suspect we should learn to say "20 days" instead of "21 days." [There is quite a variation in the time of hatching chickens. When conditions are favorable the hatch will be earlier than when they are otherwise. May not the same rule apply to bees?]

If brood will hatch in 20 days from a *full colony*, and 21 days in a *nucleus*, we ought to know it and make our calculations accordingly. The point is not only of scientific interest, but of practical import as well. We shall be glad to get reports from others. —Ed.]

SIFTINGS

J. E. CRANE, Middlebury, Vt.

That article on European foul brood, page 897, Dec. 15, is worth the careful study of every one who has not had experience with that disease.

* * *

On page 854, Dec. 1, the editor shows the place where the first Langstroth hive was set up, and the vinegar business built up by W. W. Cary & Son. Mr. Nichols, who runs the queen and bee-supply business of the company, recently called here, and he told me that the firm had the past season ground and made into cider some 73,000 bushels of apples.

* * *

That picture of Mrs. McIntyre and family, p. 893, Dec. 15, is well worth a year's subscription to GLEANINGS. If the truth were known I believe we should find many who have been able to secure an education with bees who otherwise might have been unable to do so. I know one man, now president of a college, who found the bees of great assistance along this line. A crop of honey is good, but the crop that Mrs. McIntyre shows is better.

* * *

Here is a nut for beekeepers to crack. If sweet clover is to be introduced as a farm crop, who can better do it than the beekeeping farmers? If these farmers who keep bees can show their neighbors that it pays to raise sweet clover as a farm crop it may soon come into general cultivation. But if beekeepers who may get a crop of forage or seed and a crop of honey from it are unwilling to cultivate it, I fear it will be a long time before beekeepers can persuade the farmers who do not keep bees to try it.

* * *

Good words and true are those of Dr. Miller and Mr. Holtermann, page 811, Nov. 15, on truthfulness in advertising and otherwise. There is another side to this subject. The use of superlatives for almost every thing one is talking about leaves no words to use when that which demands such adjectives comes to pass. When a person describes every little ache and ail as something dreadful, terrible, awful, he has no words to express that which is worse. Nothing in language is more beautiful than the simple, exact truth. If we add to our imperfect knowledge of facts our inability to express accurately in words what we conceive to be the truth, a disposition to magnify or minimize or distort the facts, who shall know the truth?

REQUEENING WITHOUT DEQUEENING.

The article on this subject by Arthur C. Miller, page 850, Dec. 1, is one of more than usual importance. Most queens will live one year, others for two years, and others even longer, and do well at egg-laying; but often in the spring or early summer we find more or less queens beginning to fail, so that we should like to replace them with young queens of the present season. If we can remove the old queen, and, by the smoke method, replace her at once with a young queen brought from the South, there is little loss but the work of looking up the old queen and the cost of the new one. But if we can introduce a virgin safely while the old one is still in the hive laying even moderately, much will be gained, as eggs and brood in May or early June are of more value than at any other season.

There are several things to be gained. A young laying queen in a colony will, as a rule, increase the vigor of the bees so they will both breed faster and gather honey more rapidly, when it comes. I have often found such colonies among my best for surplus. Such colonies, if left to supersede their own queens, become often so reduced in bees that their surplus is likely to be much below the average. Again, such colonies are much less likely to swarm than those having old queens. Many colonies swarm simply as a result of the supersedure of old queens.

It is not a difficult matter to rear a few queen-cells quite early to near maturity, and then introduce them in a cell-cage into colonies where a young queen is needed. But will they supersede the old queen? I submitted this question to some of the most intelligent beekeepers in Connecticut some three years ago at the Charter Oak Fair at Hartford, and it seemed to be their opinion that a virgin hatched in a colony would not be likely to be killed when first hatched; and later, if she came across the old queen, and they were to test strength to see which would survive, the young queen would be more than a match for the old one. I have been absent from home so much of the time during the three seasons I have had but little opportunity to test the matter. I hope others may do so and report. It seems to me there are large possibilities along this line.

Mr. Merwin, page 851, discusses the same subject, or one closely allied to it—the supersedure of old queens. Here is a problem well worth the attention of any experiment stations that can give it time.

Beekeeping in California

P. C. CHADWICK, Redlands, Cal.

The meeting scheduled for the marketing committee on the third Tuesday in January was postponed, there being no quorum present.

* * *

Bro. Byer and the editor are having a spar over the color of a certain honey. Sic e'm! I had the most fun out of that—even asked what made the African turn black.

* * *

W. G. Hewes says, page 74, "Bees do not put different grades of honey in the same cell." It may be that Mr. Hewes has his bees educated that high, but I never knew mine to draw the color line.

* * *

Mr. Louis H. Scholl certainly has the sympathy of every beekeeper who knows of his sad misfortune. We in California who have missed a honey crop or two think we are in hard luck; but when a man loses seven out of eleven beeyards by flood he certainly has sustained a great loss.

* * *

Dr. Miller, go slow with those large honey-yield stories. Some people do not swallow them a bit easy. Only a short time ago a gentleman who had never had a big honey crop gave me an awful shock, and almost ruined my reputation by his criticism, because I said that I had a colony in 1905 that put up 500 pounds of extracted honey. Mr. M. H. Mendleson, of Ventura, has a record of 450 pounds on the average for a season—I think he said 1897. Many of his colonies that season exceeded 500 pounds.

* * *

The eyes of the beekeeping public are on the outcome of the Root Co.'s movement of bees to the South for increase as well as to secure two honey crops. The movement of bees from Utah to the orange-groves of the southern part of this State has been going on for some time; and I believe that, as a rule, it has proven a success. Mr. G. C. Matthews, of Idaho, last spring purchased 125 colonies at Whittier, Cal.; increased them to 600, then shipped them to Idaho for the alfalfa crop. Just recently he has returned to this State with his 600 colonies to increase still more, expecting to return all to the alfalfa-fields of Idaho. The distance from Idaho to Orange Co., Cal., is about the greatest I have known of bees in car lots having been shipped. Mr. Matthews is interested with Mr. N. E. Miller.

I wish to call the attention of the California beekeepers to the fact that the time has arrived for us to act on the final campaign for funds for our honey exhibit at the World's Fair. As secretary of the exhibit committee I should be pleased to have every beekeeper from Siskiyou to Imperial County write me as to what they are willing to donate on this exhibit. We want every beekeeper to feel that he (or she) has had an opportunity to aid us. If we can finance our plans, this will be the grandest display of honey and wax ever seen. Write me at your earliest convenience as to what we may expect from you.

* * *

Dr. Miller says on page 764, in speaking of robbers, "Most of them never find out that they *can* rob; but let a bee once get into its little noddle the knowledge that there is such a thing as getting in another hive stores piled up ready to hand," etc. You are right, doctor, and I just want to emphasize what you say. Bees that get started to robbing badly will never entirely give it up until they give way naturally to a generation following that has not acquired the habit. One of the first things I always instruct my help about is, *not* to leave any honey or combs containing honey exposed to the bees. There are times, when honey is coming in freely, when it would do no particular harm; but it is best to make a practice of keeping every suspicion of trouble under cover.

* * *

One of the most beneficial rains we have received for several years began falling Jan. 9, continuing for five days. The average for the southern half of the State was nearly four inches, while the northern half received a larger amount. The weather during the entire winter has been warmer than usual, with but very little north wind at any time. I have never seen prospects brighter at this time of the year than at the present time (Jan. 25). Should the winter continue wet and warm, as now seems highly probable, we shall doubtless get a bountiful honey crop the coming season. The condition of bees is satisfactory, considering the season of dearth we have passed through. Some feeding is in progress, and much will be done later; but we shall be relieved sooner than usual by the abundance of wild flowers that are sure to come earlier.

Later.—Another very heavy rain is falling.

Beekeeping in the Southwest

LOUIS SCHOLL, New Braunfels, Texas.

BULK COMB HONEY DURING THE WINTER MONTHS.

During the first years of bulk-comb-honey production in Texas, the home of this product, every precaution was exercised to dispose of all of this kind of honey before the cool weather of the late fall months and the winter set in. This was done to evade the danger from granulation of the honey, which makes it unmarketable if this should take place. As a result, this effort on the part of the beekeepers has led to a tendency to lower prices toward the end of the season. The beekeepers themselves are responsible for these lower prices to a large degree, in that they offer their bulk comb honey for less money rather than run the risk of having it granulate on their hands. On the other hand, most of the buyers have always discontinued handling honey, and bulk comb honey especially, as soon as cool weather began. This is unfortunate for the beekeeper who is not able to dispose of his crop in time. Some have lost considerably in a few instances.

With the idea of overcoming this difficulty I have experimented quite a good deal during three or four years, with the result that I have been selling and shipping bulk comb honey throughout the entire year. Although I carried over, through last winter, only about 6000 lbs. of both comb and extracted honey for this purpose, there will be at least twice this amount used this year; and the indications now are that this will not be enough to fill all the orders that I am reasonably expecting from the steady rate they have been coming in thus far. In comparison with last year's receipt of orders up to the same time in the winter, I have had more than twice the number already.

The secret of handling bulk comb honey during the winter time is in the manner of packing it. Unlike the methods employed by most beekeepers, that of packing the entire crop as soon as the harvest has been obtained, I have very little packed in advance of orders for it. On the one there is too much danger of the honey granulating before it is sold, or at least presenting the appearance of old honey when it reaches the customer. Newly packed honey displays that fresh appearance of new goods.

For this reason our comb honey is kept in the frames in supers, and the extracted honey in cans. When orders come in, the comb honey is packed in the desired size of packages, and the extracted honey, which has first been heated to a temperature of about

150 degrees F., is poured over it quite hot—not too hot, or it will melt the comb. Usually the extracted honey has granulated in the cans; but this does not matter, as it can be liquefied easily since it must be heated any way.

* * *

STANDARDIZATION OF HIVES AND FIXTURES.

It is rather unusual to notice so few improvements or changes in hives and other beekeepers' supplies in the catalogs as this year. Heretofore our first desire, upon opening one of these catalogs, was to find what new things were added to the list or whether any of those already listed had been changed or improved.

In our opinion the beekeepers are benefited by this greater stability in the supplies, both in the cost of the investment as well as in the greater uniformity of the supplies purchased from time to time. I do not want to be understood as being opposed to improvements of any kind in the hives and the rest of the supplies and appliances. Far from that; for, in fact, I am one "who is guilty" of having been at various times instrumental in bringing about certain changes and improvements in apicultural things; and a few good substantial improvements have but recently been added to the list of the beekeepers' necessities. But I do deplore many of the radical changes and so-called improvements that have been put forward at various times that were so entirely different from the old that great expense was necessary for their adoption. Many such changes have cost beekeepers much money; but they are discarded again, sooner or later, for "something new and better" (?), and perhaps as entirely different as in the first case.

My most earnest desire has always been for a more uniform standard in every thing used by the beekeeper. The less difference in the large numbers of hives, supers, frames, sections, bottoms, and covers, used by the beekeepers of the country, the cheaper can they be manufactured. The same applies to shipping-cases and containers in which we market our crops. It would also mean much toward a reduction in the cost of most other articles used.

The more complicated an article, the more difficult to manufacture; and, consequently, the higher the cost of production. The more numerous the sizes or styles of such articles, the more expensive machinery is needed, all of which costs more money. For that reason greater simplicity and uniformity are

very essential indeed. It would be well to strive toward this end rather than be continually adding a greater number of new-fangled articles to the already large number catalogued.

HIVES FOR EXAMPLE.

The longer I study the question of the size of hives the more convinced I am that the ten-frame width of hive is the nearest to if not the proper size for all parts of the country. The prevailing opinion years ago was that the ten-frame hive was better adapted for the South, but that the eight-frame was better suited for northern localities. It has long been apparent, from the fact that the ten-frame hives have become more popular in the North, that this is a mistaken idea. The further fact that even larger hives, and those of greater width, are used successfully by some beekeepers in the North, is an indication that the ten-frame hive is not too large.

My own experience has taught me that, on the average, a colony in a ten-frame hive is usually just so far ahead of one of eight-frame capacity as the difference made by those two extra frames after the combs are built out. This provides the bees with additional room for winter and spring stores to begin with, and it enables them to spread out their brood-rearing operations so much more that more powerful colonies of bees may be obtained, and these with a lesser desire to swarm on account of the additional room. Such rousing colonies will also do better work in ten-frame supers, especially after they are tiered up several high on the hive. Since the work is over a larger surface, the super work is kept closer to the brood-nest where the bees do better work.

THE EIGHT-FRAME TOO SMALL.

The eight-frame hives proved too small for good results in my yards years ago, and I am sure that those who advocate and use these small hives, even in the North, could obtain better results with the ten-frame hives properly handled. This item alone would be worth something, and in favor of the ten-frame hives if the eight-frame size could be discarded in time. Such a move would be in the direction already suggested—that of decreasing the number of different sizes and also the different styles of hives. It would be more economical, in our opinion, to have only the one size, all ten-frame hives and supers, covers, and bottoms, and such other things as are used with the hives. Besides, there would be less confusion in ordering new goods, and less trouble on this score in the apiaries if only one size of hives were kept.

THE HIVES I USE.

It may be asserted that I am deviating from the very thing that I am advocating in this article because I use a hive that is altogether different from the standard hives in use. Most of the readers know that I am a strong advocate of the shallow-story hives or divisible-brood-chamber hives. But I get better results with this kind of hive, especially since I depend upon a large number of apiaries. With over thirty apiaries scattered over the country, and visited only at what most beekeepers would term long intervals, it has been possible to keep up with the bees, especially during the swarming season, just because certain manipulations were possible that enabled us to reach the end desired.

It must be remembered also that our hives are composed of entirely standard parts. Nothing but supers of the Ideal ten-frame size are used throughout for brood-chambers and all. The regular ten-frame bottom-boards and covers fit every hive made up of these simple supers, and the size of the hives can be enlarged or decreased with the greatest ease. There is only one style and size of frames, and only one kind of foundation is used in all of them, whether they are used in the brood-chambers or in the supers for comb or extracted honey. Neither are any of the frames wired, which is another item in saving in both time and expense.

Since we have tried many styles of hives during over twenty years of beekeeping, testing a number of each kind side by side, we have found that there is quite a difference between the results that may be obtained from the several kinds of hives. The shallow-hive system, incorporating the divisible-brood-chamber hive that we have tried most thoroughly for over fifteen years right beside other styles, both eight and ten frame, gave us the best results; and its very simplicity of construction throughout, together with the interchangeability of the various stories of the hives, has prompted me to make the suggestions for more simple hives, supers, and other beekeepers' supplies, with a view of lessening complications and confusion, and lowering, if possible, the price of our necessities.

Not in the Queen Trade

Will you allow me to state through your columns that I am not in the queen trade? I gave it up twenty years ago. Since I gave my opinion on what constituted a good queen in GLEANINGS I have had a large number of inquiries for queens, and it will save my time and correspondents' if you will publish the fact that I have none to sell.

MAJOR SHALLARD,

South Woodburn, N. S. W., Australia.

Conversations with Doolittle

At Borodino, New York.

THE APIARIST HONEY PEDDLER.

"I have more extracted honey than I shall use this winter; and as the bees have an abundant supply I should like to dispose of it. Do you think that it would pay me to go out into the surrounding country and villages peddling this honey?"

In 1869, when I first commenced to keep bees, the demand for honey was in excess of the supply, and even strained honey sold readily at high prices. But with the seventies came movable frames quite generally, then the honey-extractor, comb foundation, etc. Bee journals multiplied, and through these things the industry was given such a boom that large quantities of honey were produced, and prices began to tumble till the disposal of honey became a more serious problem than the question of production. A little later on, the tide changed from comb-honey production to extracted, as the extracted readily brought fifteen, eighteen, and in some instances twenty cents, when shipped in barrels holding 500 lbs. Up to this time all comb honey was shipped by express, and the high rates and numerous breakages laid heavily on the minds of the producers. Hence, the cheaper freight rates with no danger from breakage revolutionized matters, and much more extracted honey was produced than comb. Then arose the question asked by our correspondent, and many beekeepers went out into the "lanes and byways" selling honey from house to house at a lower price than was realized in the early seventies in 500-pound packages delivered at the railroad station. I was never given to peddling; in fact, I hated such a thing, but the taxes had to be paid and the family supported, so I was driven to that which it seemed to me I was never fitted for. And, strange as it may appear, I found that I could sell an average of 100 pounds a day in any good farming community, while in villages I could do even better.

First in importance is having good *thoroughly ripened honey*, no matter whether it is clover, basswood, or buckwheat. The latter should sell at about three cents less per pound than the white honey. When ready, take a sample in one of the five-gallon cans, and a half-gallon Dover measure. This measure has a funnel attachment so that as little or as much may be poured out as desired without the dripping or smearing of things generally, as is the case with dip-pers and such like, generally used for sam-

pling honey. If the honey is granulated it should be liquefied; and if the weather is cold one of the numerous heaters should be taken along so that the honey in the measure can be kept warm enough to pour readily.

There are two ways of finding buyers. The way I used, and the preferable one, where time is not too limited, is, with measure half or two-thirds full, to call at every house—do not skip one; and when the door is opened, say to the one opening it, "I have some very nice honey; and if you will bring me a sauce-dish I should like to leave a little sample of it for a taste for you and the *children*," putting the emphasis on the children, if you see any, for a child's taste for honey is a better advertisement for you than a hundred printed advertisements. When the sauce-dish is brought, pour in till it is two-thirds full, and leave a printed slip, telling that you will be around with honey like the sample in two or three days. Give the price per pound, making the price one cent a pound less where one or more dollars' worth is taken.

The second day, if the weather is favorable, load on your honey-extractor can, filled with honey, and fill all orders, even to as little as one pound; for a small sale often paves the way for a larger one, leading to a steady customer for years to come. It always pays to be accommodating and obliging. Do not annoy people by urging them to buy when they do not want to, and be invariably polite and pleasant, no matter whether they buy or not. In this way friends can be easily made who will be glad to see you come again. Follow the same route each year, and your sales will increase each time, especially if you keep your honey up to the same standard of perfection.

If a wet poor year comes when the honey is not so well ripened, or gets mixed in with other honeys owing to the slowness of the gathering, explain the matter, and put the price accordingly. It is the most satisfactory to let the purchaser furnish the dish, then there is no package to pay for or be returned. However, it is well to have a few filled five-pound pails with you to meet any demand that may be made for such.

The second plan is to take the big can of honey right along with you, and upon entering each house let whoever meets you sample the honey, and then sell at the same call; but if you have the time the former plan will give much the better results.

General Correspondence

NOTES—NOT FOR DISCOUNT

BY ARTHUR C. MILLER

These "Notes" are not an attempt to steal Byer's thunder. These are quite a different kind. These are not for "discount."

Prejudice, the greatest stumblingblock to modern bee culture. Forget it. Better err on the side of trying a lot of fool things than miss one good one because you "know it won't work."

The Chinese keep bees as our grand-daddies did. Excuse me, our grand-daddies kept bees as the Chinese did and do, and doubtless have done for thousands of years, in hollowed-out logs. Sometimes a rough box is used.

No wonder chunk honey is popular where it is not subject to extreme cold. What is more inviting than a piece of comb of virgin whiteness with golden honey dripping from its broken cells? I've just been sampling some, and ought to know how good it is.

Every now and then one or another of the boys is heard to say that he will "risk his reputation" that somebody's pet scheme won't work. Reckless remark that. First thing they know some meddler will look up their reputation, and who knows what they'll find? Ginger!

Stimulative feeding for spring should always be done in the fall. Give them all you think they will need, then double it, and then add half as much again for good measure. Then forget them until late spring. I have given this instruction for many years, but some have not yet learned it.

Funny how difficult it is for some persons to tell whether results are *on account of* or *in spite of* something or other. Half the time the scheme or contraption has nothing whatever to do with the outcome. What have I in mind? I'll not tell you; 'twould hurt too many feelings, and I'm not looking for trouble.

In the *American Bee Journal* for November, T. W. Hall, of Colo, Iowa, is quoted as requeening at the beginning of the harvest and winning by it. Hereabout we do it *before* the harvest, the *fall before*, and also win. It is easier then, and a whole lot cheaper too. Good practice this, having young queens at the head of all colonies. Paste it in your next summer's hat and try it.

If, some bright morning, you find your horse minus tail and mane, lay it to an Ontario chap named Munro. He is recommending it to stop robbing—probably sets the bees to hunting for the tailless horse (and, say—why don't they sting the horse smell on the horse hair? Answer me that, you odorous champions). 'Most any of the creosote preparations smeared about the entrance will stop robbing at once. Worth remembering.

Buying versus making supplies often agitates the beekeepers, and the answer is an interrogation-mark. Much depends on the man, something on his manner of beekeeping, and an excuse is given to "location." Not a few of the boys buy some from the supply manufacturers, some from local concerns, and make some. Good scheme, too, and interesting to see how you shift about each year. If you don't shift you have stopped thinking, or have reached perfection—i. e., died.

In the language of Artemus Ward: "They are amooisin little cusses." Who? Why, those Southern New England beekeepers who are talking about the white-clover flow and their crops of that honey. Well, ignorance is bliss, 'tis said, and they are just as happy as if their honey really came from that instead of from half a dozen other sources. If they only knew the sources of their surplus they would soon increase it. Think it over from now till the next harvest, then *look*; but have a care where you look.

If Hand and Bonney want to get mightily stuck up in their way of producing comb honey, I don't care, and probably they don't care either about anybody's opinions. "Stuck-up people" don't. We hereabouts think it *cheaper* to let the bees put the honey in the sections from the start. We get ideal filling too. How? Oh, pshaw! What's the use of my telling you? We New Englanders are not considered in it for raising honey. But you notice we stay right here and don't keep moving apiaries, as they do in Ontario and Ohio and several elsewhere.

In November 15th GLEANINGS Louis Scholl has a fine vat for melting candied honey in cans. (Note.—Not a pun.) I had a glimmering recollection that honey was slow to cut that caper in his vicinity.

Chunks of the 60-gallon size evidently are too big. There is a scheme used by some which beats that plan. Put the cans on their side slightly sloping toward the outlet (formerly the inlet), apply gentle heat under cans, and as fast as the honey melts it runs out into a large tank, stirring itself on the way. Great scheme, and rapid. O Pscholl!

If one should judge from the seemingly fiendish glee with which people write and editors publish all sorts of makeshifts, one might be pardoned for believing them the virtuous and better way of beekeeping. Cut out all such. Throw away, burn up, destroy, annihilate, all misfit and obsolete material. It is the poorest sort of economy to use it. It gives one a pain—yes, several—to see the worse than poor planning and management of some beekeepers. And the amount of non-productive labor they do is—well, it makes one too weary to think of words to describe it. No wonder such people groan and kick at the preaching of “keep more bees.” Poor souls, they have all they can do to keep what they have.

Not that I would cast any reflections on H. H. Root's groove-and-wedge method of putting foundation into brood-frames, but 'tis horribly slow, and wastes foundation at the rate of one sheet in about thirty. At 50 cents per pound, and only 7 or 8 sheets per

pound, it counts up in a few hundred pounds. Down in this corner of the country several of us do it faster than that, waste no foundation, use a grade running 11 to 12 sheets to the pound, and get perfect combs. But then, we don't sell foundation. We buy it of the Roots and others, pay them more than 50 cents for it, and save money at that. But this is another story. I'll tell it to you some day—if you will promise to listen and try it before you comment on it.

Wesley Foster, the professional Colorado wanderer, says that one Nichols, of that part of the continental roof, “has demonstrated that a beekeeper can successfully rear good queens by the most approved methods and produce a crop at the same time.” Now, Wesley, please tell us how many queens, and the cost per queen, and how many colonies it took for queens, and how many for crop. But, better still, just run down here and we will show you how to have *one* colony raise *four hundred* queens in one season, magnificent ones too, and have that same colony a rousing one at the end of the season; and when we want to put a few thrills into the Western amateurs, we produce a crop on that same colony at the same time. And by the way, Wesley, the “most approved” methods are not always the “most effective.”

NOTES FROM GERMANY

BY J. A. HEBERLE

In Germany we have no comb-honey canard, but we have something much worse. We have artificial honey and cheap foreign honey from Central and South America. Although we have a duty of \$9.60 for 220 lbs., the beekeepers complain of this competition as unfair. Of course this blame is on the home merchant, not the foreign beekeepers.

This imported honey, so it is said, is in a very unclean condition. It could not be sold as it is imported, because nobody would buy such nasty-looking stuff, even if the law would permit. The importers heat it up, clean it thoroughly, and sell it as “warranted pure honey.” The beekeepers say that the origin of all honey sold should be declared, so that the consumers may know what they are getting. This foreign honey costs probably about 3 cts. per pound at the door of the beekeeper, and even less. The price for good honey in Germany is high, because the bee-pastures (and the weather) are very poor compared with those of America. In some districts (counties) 10

to 12 lbs. is the average per colony in a normal season. In poor seasons many beekeepers do not get any surplus; 25 to 30 lbs. is in many districts considered a very good crop. Real good crops we have in some seasons in districts of the Black Forest and the “Vogesen.” At the base of the needles of a fir-tree a sweet juice exudes. It is not honey-dew nor from the plant-louse. The bees gather some years a great deal of this black honey, which has a peculiar sweet taste reminding one of the forest; but it lacks the fine odor and taste characteristic of honey from the nectar of flowers. A good many people like it, and consider it especially salubrious.

An immense quantity of artificial and adulterated honey is sold. Often an inferior syrup is mixed with some of the cheap foreign honey. It is usually sold under a fancy name that has the word honey in its combination. Manufacturers and retailers gain heavily, so that, if now and then one is fined a few dollars he does not mind that. We have a law, but the meshes are too wide,

and most crooks get through without being caught.

The beekeepers of Germany could easily have the present laws so amended that the origin of the honey would have to be declared, and so that all artificial products and mixtures would have to be sold as such—not being allowed the use of the word "honey" in any combination.

Beekeepers here have still another wish. They want a law enacted by the national parliament so that it may be uniform—the same in the whole empire—about foul brood and other diseases of the bees. The general government and the parliament would readily accede to these demands, notwithstanding the opposition of the manufacturers of artificial honey and the importers and vendors of cheap foreign honey. Years ago this honey was used exclusively by the confectioners.

The beekeepers should be united in one powerful federation. "There is the rub." Conferences with that end in view were held, and it was generally believed that the right formula was found. The statutes had been accepted. It was agreed to complete the Union in July last at Berlin. But there is "many a slip 'twixt cup and lip." The president of the largest organization, at the last moment, at Berlin, ignored the agreement—the formula he had helped to make. Now the union is further off than ever. We have two large unions, each with 70,000 members, and some smaller ones; but we have not what we should have. It seems that some, a little top-heavy from the importance they have in their own estimation, are to blame for the failure at Berlin. Now some with a talent for demagoguery are trying to draw a Mason-Dixon line. I suppose the beekeepers will have or get the organization they deserve.

DO BEES CARRY EGGS FROM ONE COMB TO ANOTHER?

The *Schweizerische Bienenzeitung* brings a short article that answers this question in the affirmative. Mr. Gassman writes that he wanted to get a series of queen-cells from "Esther." For that purpose he dequeened a strong colony eight days before. On the 19th of May he wanted to get the eggs from "E," but this colony had swarmed, and the swarm had eggs in one comb. This comb was taken and given to the colony that was to rear the queen-cells. Before the comb from E was given to this nursing colony all the queen-cells (19) were destroyed. Seven days later this nursing colony was examined. On a comb this side of the one from E, on the upper periphery of the brood circle, there was a capped queen-cell on each side

of the comb. The contents of both cells were white queen pupas. On the comb from E there were 18 capped queen-cells. Mr. G is sure not to have overlooked the cells on the 19th of May; but if he had, the queens would have emerged, or the cells would at least have been ripe. He concludes that the eggs from the comb given were carried to the adjacent comb. The one comb given seemed not sufficient for the colony.

Another theory would be that the colony had preserved the eggs from the original queen. It has been reported that bees do sometimes preserve eggs. It is a fact that fresh bee eggs can be preserved several days under proper conditions without losing the quality of hatching.

A NEW METHOD TO DETECT ADULTERATED HONEY.

Dr. Armani and Dr. Barboni have discovered a reaction whereby adulterated honey may be easily detected. Two grains of the honey are put in a porcelain dish and dissolved with 10 c. c. of distilled water. The solution is transferred to a test-tube, and 1 c. c. of a solution of benzin saturated with glacial acetic acid is added. Adulterated honey will color the solution a yellowish red, while pure honey will not change the color. The color reaction takes place immediately, and the intensity will be in proportion to the quantity of the artificial product in the sample examined. This test is very easy to make, and does not take much time. It can hardly be expected to detect every adulteration. It will answer, probably, for only one artificial product; but the wholesale adulterators have able chemists in their employ, and most likely find a way so the reaction won't work. Chemists have to-day no method of analysis by which an adulteration may in all cases be proven. The natural honey differs so much according to the source of nectar that proving adulteration by analysis is not a success. It would be easier, for instance, to prove that a certain sample is not alfalfa or white-clover honey, because either of these honeys will show very little variation, no matter where it is from; but here we have mostly honey derived from five, ten, and more different flowers, and these flowers furnish nectars in various proportions; so if we take one ingredient that can be determined quantitatively we must allow a large limit as minimum and maximum before we can say this honey is adulterated. Manufacturers know this and act accordingly.

BEES MOVED 1½ MILES TO BASSWOOD.

Mr. Freudenstein, in his *Neuen Bienenzeitung*, writes that he moved his bees this summer 1½ miles to get the benefit of the



Among the big pines in Bluejay Canyon. Photographed by P. C. CHADWICK.

basswood-honey flow. Not one bee flew back to the old stand. That is quite different from the orthodox teaching, and what our

books say about changing or moving bees during the summer.

Markt Oberdorf, Bavaria, Germany.

BEE-LIFE IN THE SAN BERNARDINO MOUNTAINS

BY P. C. CHADWICK

I have lived in the foot-hill region of the San Bernardino Mountains for ten years, and have penetrated them for some distance in the canyons and lower levels; but my desire to reach the higher elevations and study the flora, and ascertain to what elevation bee-life could be found, was not gratified until August of last year.

I planned my trip with the object of reaching the limit of vegetation, and to that end decided to start for the top of Mt. San Gorgonio (old Grayback), which is the highest point in the southern part of the State, reaching an elevation of 11,485 feet. The summit is reached only by narrow trails, and they are rather dim in many places, making a guide necessary. In this respect I was fortunate in that my oldest son had made three trips to the summit, and was thoroughly acquainted with the trails, though he is but fifteen years of age. He made a fine companion, and gave me much pleasure by describing the various streams, peaks, and historic spots.

The elevation at my home in Redlands is 1400 feet. Forest Home, a mountain resort, and the end of our first day's journey, is 17 miles distant, with an elevation of 5000 feet.

This, the first lap of our journey, was made by automobile with a friend, our tent and camp equipment coming by auto stage a few hours later. Our tent was pitched and permanent camp established at this point, which is 16 miles from the summit of old Grayback, but is the highest point to which roads are made. Aside from making a short



This flower is known as cow cabbage, and is found in the higher parts of the San Bernardino Range. Bees work it freely for nectar. Photographed by P. C. Chadwick.



The lighter-colored shrubbery in the foreground is mountain lilac, and the darker, the scrubby mountain mesquite. The little bush in the center of foreground is mesquite. *Photographed by P. C. CHADWICK.*

trip with Wallace (my son) early the next morning, the day was spent in making camp comfortable for my daughter Ruth and her friend who were to keep camp alone while we went into the higher altitudes. Here I wish to say a word about the automobile in the mountains. It is wonderful what a load the auto truck running to this point is able to climb the grades with; and the machines that reach this resort over mountain roads are many indeed. However,

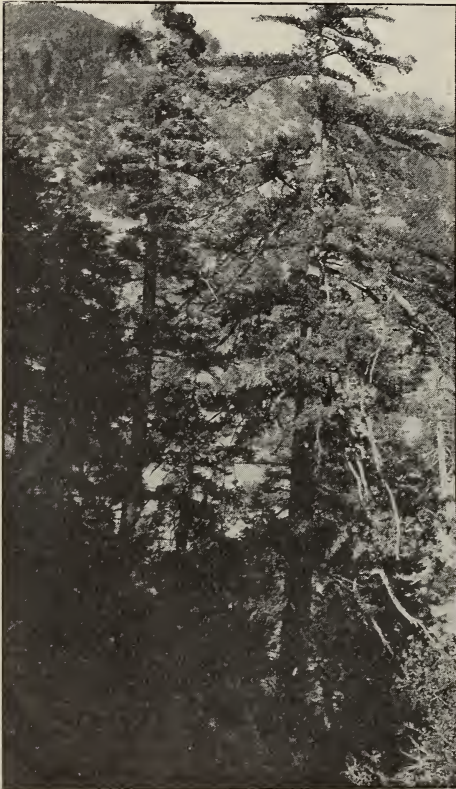
of all machines that get there the little Ford is about the first and most sure, and I believe that, for light roustabout work for an apiary over any kind of roads the average beekeeper has to travel over, it is about the best and most sure of any, regardless of the price.

The second day we started out early for a trip to Dobbs Cabin by way of the Dobbs trail. This we reached after six miles of steady climbing which brought us to the big



A field of wild buckwheat containing over 40 acres on the mountain-side near Forest Home. Elevation 5500 feet. *Photographed by P. C. CHADWICK.*

pine forests. There was wild buckwheat to be seen in the canyon, from the time we entered, eight miles below Forest Home, as well as wild clematis, which was abundant, and alive with bees. These two comprised the chief flora of the region around Forest Home and for some three miles up the canyon above this point. But here we began to find traces of white sage. Though it was nearly out, there were bees busy trying to gather what nectar it contained. I might add here that there was no great amount of white sage anywhere in this canyon, nor on the mountain-sides adjoining. After traveling up the canyon three miles we began the ascent of the steep trail toward the summit, traveling slowly and making careful study of all honey-bearing plants. We saw white sage and wild buckwheat up to an elevation of nearly 7000 feet, but no higher. The entire mountain side was covered with wild lilac, mountain mesquite, and amaranzita, but the blooming period of all these had passed at the highest elevation we reached on this day's travel, about 7500 feet. The



A giant sugar pine. No lumber grows that is better suited for hives. The clear lumber in this tree would retail in Redlands for \$150 per thousand. Photographed by P. C. Chadwick.



P. C. Chadwick watching a bee working on the cow cabbage at an elevation of 9000 ft. The bare peak in the distance is a part of the summit of the San Bernardino Range.

abundance of bee life found was a great surprise to me, for every flower of which there were a few of many varieties contained bees. At 7500 feet I found them watering, and coursed them on up the canyon among the giant pines, firs, and redwood. It is not generally known that there are redwood trees in these mountains; but we found one that was almost 15 feet through at this great elevation.

The day was more than half gone, so we returned to camp satisfied with what we had accomplished.

We had found no lack of bee life to the limit of altitude reached; had found to about what level the white sage and wild buckwheat could be found; secured some fine pictures, had photographed a field of buckwheat on the side of this mountain, that contained more than 40 acres, as well as being able to find one bee-tree and many sources that we did not take the time to follow up.

The following day we were up and off early, for we had decided to go to the limit

of vegetation which required a walk of nearly thirty miles for the day. This time we continued further up the canyon and took the Vivian trail to Vivian Canyon, and then on over toward the summit. The elevation of honey-plants was found about as we had found them the day before, up to 8000 feet; but at this point the mountain mesquite was blooming profusely, and was literally alive with bees. But by the time we reached an elevation of 9000 feet the bloom had not yet come out; but the bees were working on what is known as the cow-cabbage and a few small flowering plants. We had almost reached the limit of vegetation, there being no trees but the lumber pines, some amaranita brush of low scrubby growth, wild lilac and mountain mesquite not yet blooming. Vegetation was so thin, and flowers so scarce, that we decided it would be useless to continue the search,

though I returned fully convinced that it was probable that bees often flew over the barren peak of old Grayback, and that the flowers that bloom on this peak at times are visited by the bee for its store of honey.

As Uncle Sam zealously guards the giant trees and all growth in this a national forest reserve, the little bee will doubtless occupy this vast stretch of mountain fastness undisturbed for many years to come. The giant pines of the mountain sides, coves, and canyon will remain in their natural state to help protect and retain the vast amount of winter rain and snow that finds its way into the soil, to come again from the springs that feed the mountain streams, finding its way to the valleys to water the orange-groves and other farm products that help to make life in the great semi-arid region of Southern California.

Redlands, Cal.

DO NOT MINIMIZE THE DANGERS OF AMERICAN FOUL BROOD

BY A. F. WAGNER

Of late, when speaking and writing of bee diseases, European foul brood seems to be uppermost in the thoughts and writings of most beekeepers. Is there not a possibility that, in our zeal to prevent its importation, and eradicating it when found, the danger of American foul brood is minimized? A word of warning at this time may not be amiss.

American foul brood still exists in perhaps all of the counties of Southern California. At a recent meeting of the Board of Supervisors the chairman said that, if he was not mistaken, beekeepers are not afraid of this disease. European foul brood being the most feared. When asked if I felt the same about it I answered that I surely dreaded American foul brood, and so would any one else who had ever had any experience with it. The beekeeper who thinks he has a light job on his hands to eradicate American foul brood will find out his mistake before he gets through.

A description of this disease in this article will hardly be necessary, as a description of it can be found in any book on bee culture, so that any intelligent person can readily detect it. But I should like to write a few words as to how it may spread and become a menace to an entire neighborhood.

It is often caused by swarms, either natural or absconding, from affected colonies. The danger is most in the latter. To guard against this, never hive a swarm into a hive containing drawn combs, nor unite a swarm with weak colonies. I know this to be a

practice with many beekeepers. Don't count too much on those stray swarms that happen to come to you. Let me give you an illustration: On inspecting a certain yard I found several affected colonies, and the regular treatment was prescribed. On a trip to this yard later I asked the owner how he had succeeded. The answer was, "Oh! all right, what are left. Some of them absconded." (I want you to notice they absconded. Where to?) I had tried to get this party to use my mode of treatment, but he took what he thought a quicker mode. Those absconding bees perhaps went to a yard in the neighborhood, and perhaps were hived directly into a hive containing drawn combs, and you know the result. Later another case of foul brood, another shaking, another absconding swarm, etc. To be on the safe side, always hive stray swarms on starters.

"But," you say, "how can I prevent absconding and get rid of the disease?" In answer I will describe a treatment I used some ten or eleven years ago.

After trying the shaking plan one day, and finding one-third of the number so treated clinging to brush the next morning, and some gone entirely I marked every colony that needed treatment, and worked every thing down to the brood-chamber by extracting the honey and melting the combs into wax. Next I took one comb out of the center of the brood-nest and put in its place a frame containing about two inches of comb foundation which we will term a

starter. In two days I removed every thing except this starter which had by this time been drawn out, and perhaps contained some honey. I placed this starter to one side of the hive and filled in with full sheets of comb foundation. Every thing that was removed was taken care of by extracting the honey from the combs and then melting the combs into wax. One or two days later I removed the starter, and in some instances the comb next to it also. By this treatment 95 per cent and over were cured, and there was no absconding.

Some say, "Why not cage the queen to prevent absconding?" I will say that I have had them abscond and leave the queen. And, more than that, the bees were so confused or excited that they would swarm out and form into two or three different clusters, and either try to enter, or actually enter, other hives in the apiary.

Others say that we are bound to have the disease as long as the trees contain wild bees, or some farmers have only one or two neglected colonies. To the first I will reply that I have yet to meet the first man who ever mentioned that he had found foul brood in a bee-tree. I do not say it isn't there; but did you ever see a bee-tree being robbed out by other bees? In case they get foul brood and die, the moths are generally there before any thing else. The danger

from this source is not great. From the other source, of course, the danger is greater, but not generally as great as imagined, as bees that are not much disturbed are hardly ever robbed by other bees; and should they die by becoming queenless or by disease, the moths soon have every thing.

Another means of spreading this disease is when the honey from diseased colonies is sold to retail trade and the empty cans are thrown where bees can clean out the contents. It would be a good plan to make a law making it compulsory for each to mark or stamp each can, stating that the honey was taken from bees containing foul brood. I believe this last, if it could be enacted, would rid the country of foul brood quicker than any thing else.

El Centro, Cal.

[We agree with nearly all that our correspondent says, except that we believe it would be impossible to get a law passed compelling a producer to mark all honey from foul-broody apiaries, for honey so marked would be almost unsalable. The average consumer, knowing nothing of the nature of the disease, would consider honey from a hive containing *foul brood* unfit for table use.

As to whether swarms may carry foul brood, see editorial.—Ed.]

FROM NORTHERN OHIO TO NORTHERN FLORIDA

BY J. E. MARCHANT

This venture was undertaken by The A. I. Root Co. in order to determine the advisability of shipping a carload of bees from Ohio to Florida, a distance of fifteen hundred miles, with the prospect of making an increase of 100 per cent, and perhaps a fair crop of honey.

Six days prior to the time this shipment was made, a severe blizzard raged in that section of Ohio, covering the ground with about two feet of snow, making it necessary to dig the hives from under the snow. The railroad being blocked by snow it necessitated a delay of five days before shipment. For shipment we used a ventilated refrigerator car. The bees were loaded in the car with the frames running the same way as the car, with three rows on one side and two on the opposite, with a narrow passage-way between, and four tiers deep. They were kept in place by means of a framework of 1 x 8 boards reinforced by a railing, and a stanchion of 2 x 4's, which, with the thickness of the cleats on the bottom-board, and the thickness of the screen on

top, left a space of eight inches between every two tiers, this making it possible to water every hive in the car. The hive-covers were stored in any place where it was possible, in order to economize room.

My sleeping accommodation consisted of a cot, which I was unable to use, placed in the alleyway. Dining-car accommodation not being available, it left me many a time with a hungry stomach. Upon leaving Medina I took a supply of eatables which lasted me till I got to Nashville, Tenn. There I walked the length of the train, some sixty cars, and half a mile beyond, and had the pleasure of paying twenty cents apiece for some small railroad sandwiches. During this trip a few breakdowns occurred, which necessitated sawing occasionally some boards and driving nails. The motion of a fast freight made this operation somewhat disagreeable, as it made it as easy to hit the thumb as the nail.

Soon after leaving Birmingham, Ala., a portion of the staging broke, compelling me to stop over at Montgomery for repairs.

This necessitated the removal of 135 colonies. In making repairs and reloading, fifteen hours were lost. From Montgomery to Bainbridge, Ga., a little water was used—possibly twelve or fifteen gallons. Upon arrival at Bainbridge the bees were taken from the car and placed on the steambot dock. From the time of unloading to the departure of the steamer, thirty hours elapsed. The shortness of time and nearness to destination prevented me from giving them a flight. To keep the bees quiet during this interval a very large amount of water was used. Four hours were consumed in loading the bees upon the steamer; the weather being very warm, and the bees being piled upon the open deck, necessitated an almost continuous supply of water.

The trip from Bainbridge to Randlett's Landing, Fla., took twenty-four hours. Upon arrival at Randlett's Landing I had a

crew of five men in readiness. The boat's crew carried the hives ashore, and my men placed them upon their stands. The bees were then released and given a flight after thirteen days of confinement. Upon examination next day I found three colonies dead, making a loss of one per cent. Accompanying these bees there was a carload of supplies. During the past six weeks I have been very busy in nailing frames, assembling hives, and painting them. In regard to stimulating, I now have 200 Boardman feeders in use.

To-day, Jan. 8, I saw a few drones flying, and the bees are gathering an abundance of pollen. Examination shows brood in all stages in advance of the season.

In conclusion I would say that, if any beekeeper thinks this trip was all pleasure, I extend him a cordial invitation to accompany me on my return trip.

BEES WORK MORE READILY ON BROOD FOUNDATION THAN ON THIN SUPER, EITHER IN THE BROOD-FRAMES OR SUPER

BY GEORGE T. WHITTEN

Last spring, when fitting up one of my observatory hives, I was short of medium brood foundation to fill two frames. I filled three of the center frames with half medium brood and half thin section foundation—that is, a strip of each covering half the width of the frames. As the strips of section foundation were about two inches too short to fill the space, they were placed down within half an inch of the bottom of the frame, and a piece of brood foundation filled in the space at the top. The three frames were placed in the center of the hive. The bees were put into the hive, and at once began to draw out the brood foundation, leaving the thin section. They continued drawing out and filling it with brood and honey until the outside frames were nearly filled.

When I found they would not work on the thin foundation if there was any thing else, I took the frames out, melted some wax, and painted them with a thin coat; but they still refused to work on them. I then cut these portions out and put in medium brood foundation. The bees then went to work on them, drew them out, and filled them the same as the others. They would draw the brood foundation out, and fill and cap it, up to the very last cell where the two came together.

I observed that, while they were working on the foundation early in the season, when there was not much honey coming in, they worked the foundation out very thin; but as

the flow increases they do not work it out much but build on to it.

This experience led me to think that one reason bees hesitate to work in sections is the thin foundation used in them.

I filled some sections with a strip of medium brood foundation $\frac{3}{8}$ of an inch wide, all the way around the edges, and some with thin super, full sheets, and placed them alternately in an observatory super, and I found that the bees worked on the brood foundation first in every case, and filled the sections out to the edges well.

I intend to give this a more thorough trial this coming season. Whether this has any effect on the swarming problem I do not know, for I have not had a natural swarm in four years, and only three in seven years.

Hartford, Ct.

[Your experience is quite in line with that of others. There can be no question but that bees prefer brood to thin super foundation. This preference is so marked that some large producers have been using brood foundation in their sections in place of thin super. The bees will enter supers with heavier foundation much more readily than supers with ordinary thin.

This may and probably does have a bearing on the swarming question. The principal reason why thin super should be used—and that may be an important one—is that it leaves less midrib in the comb honey; but

during the past summer we tried light brood foundation in several of our section supers. After the sections were filled and capped over we asked Dr. Phillips, of the Bureau of Entomology, Washington, D. C., who took dinner with us, to try them. He, like the rest of us, was frank to say that he could detect no appreciable "gob" or mid-rib. In fact, if we had said nothing about the brood foundation in the first place he would have thought nothing about it except that it was very fine honey, equal to the very best in every respect.

We are coming to believe that perhaps we beekeepers have magnified the evil of using brood foundation in sections. The fact is, we doubt very much whether the average connoisseur can detect the difference be-

tween a nice section of comb honey built from brood foundation, and a comb built from ordinary thin super.

There is another factor to be considered—namely, that brood foundation will cost more per square foot than thin super; but the relative difference is not great. If by using the heavier grade swarming can be reduced, and if the bees will enter the section supers a day or two earlier, we may well afford to pay more.

Mr. Whitten's observation, that bees will thin down foundation more when they have time, is in line with experiments by the late Mr. E. B. Weed some fifteen years ago.

This is an interesting question, and we shall be glad to hear from others who have any thing to offer on the subject.—Ed.]

PROVIDING WATER FOR BEES AND QUEENS SENT BY MAIL

BY L. J. DUNN

There is always a loss by shipping queens and bees by mail without water, especially export shipments. With a punctured water-can, as in the one and two pound packages, the cages are in all kinds of positions in the mail-sacks, and the opening may be above the water at times, leaving the bees without

water. By inserting a piece of cloth for a wick, as I have done, the water siphons out, no matter what position the cage is in. The plan has proven satisfactory with me on long shipments.

San Jose, Cal.

[We have had no opportunity of trying



Mailing-cages with water-cans to provide moisture for the bees en route.

a wick in the can of water used in the mailing-cages, but we see no reason why it should not work. In the accompanying illustration the larger cage has Mr. Dunn's water-can in the upper left-hand compartment, the wick being indistinctly shown in the side. We tried on quite a large scale a similar can shown in the upper right-hand compartment of the smaller cage. We used

a very thin can or box containing hardly an eighth of water. By this plan the bees can reach the water through the perforation as long as there is any left, unless the cage stands on edge when the water is nearly gone. The use of the wick ought to give better results, provided it can be adjusted in such a manner as not to waste the water. —Ed.]

A NEW WAY TO MAKE CANDY FOR COLD-WEATHER FEEDING

BY A. V. SMALL

Under separate cover I am sending a sample of winter candy made by a process that I consider easier and safer (less danger of burning) than the cooking-down method.

The process is simply to pour into a box of dry sugar enough thick syrup, *boiling hot*, to make a mixture about the consistency of mortar. In a few hours this will cool into a solid granular cake, and then it is ready for the bees.

By experimenting I find that this candy can be made as dry as ten pounds of sugar to one of water, and it can be made as moist as seven pounds of sugar to one of water. I consider the proportion of eight to one about right. To each pound of water add an ounce or more of honey. This gives the candy a food flavor; and as the bees eat it they smack their lips and say, "It's just like mother used to make." And I don't think the candy has the flinty hardness when a little honey is used.

A convenient way of forming the cakes is as follows: Put a partition in a super and fold a piece of heavy wrapping-paper so that it will just fit in one of these spaces like a paper box. Into this put your dry sugar. If you want a cake that contains nine pounds of sugar, put six pounds in the box. You will get the other three pounds of sugar when you add your thick boiling-hot syrup.

Pour in enough syrup so the sugar can be worked like mortar. Let it set until cold, when you can lift it out, paper and all. Trim the paper down to within half an inch of the surface of the candy. Place this, candy side down, on top of the frames, supported by little blocks. Now put on your packing, and with a good water-tight hive-cover your bees are ready for winter.

There are a good many advantages about feeding candy, particularly for out-apiaries. From the trend of beekeeping to-day we may expect some of these to be brought before the public in the next few years.

ARTIFICIAL POLLEN.

On page 864, December 1, Mr. B. W. Brown asks for an artificial substitute for pollen to be fed inside the hive. During bad weather in the spring I have fed graham flour, honey, and a little powdered sugar, mixed to the consistency of stiff dough. This was packed in paper tubes, $\frac{3}{4}$ inch in diameter by ten long. The tubes were closed at one end; and the bees, having access to such a small surface of the dough, ate their way through the tube slowly.

These tubes were placed on top of the brood-frames, two tubes in a hive. They were not used until after natural pollen had appeared, and then they were given to the



One of W. L. Cheney's swarms that clustered conveniently on a wire fence.



A swarm large enough to fill a wagon-bed!



Mr. Cheney, Jr., ready for work.

bees only during stormy periods. The bees seemed to relish the mixture, and I attribute the steady laying of my queens during stormy weather to the feeding of this artificial pollen.

St. Joseph, Mo.

[We have examined a sample of the candy sent us by our correspondent. It resembles moist loaf sugar, although it is somewhat softer. We should think it might crumble enough to cause some waste by particles dropping down between the combs, but perhaps not. It is simpler to make than the hard candy described in the Jan. 1st issue.

Later.—The following came to hand after the foregoing was written.—Ed.]

Your letter of Jan. 20 is at hand. I have just looked at fifteen hives having the candy slabs over the frames. There has been some

crumbling, as you suggest. The slabs with the greatest amount of water crumbled most; but the slabs with the least amount of water crumbled no more than the hard boiled-down candy which I have used heretofore.

I find that, if the syrup is made too thick, it will "wet up" only a small amount of dry sugar, resulting in a slab of candy with *too much water*. I find that syrup made two of sugar to one of water will wet up a large amount of dry sugar; and by using only enough to moisten the sugar nicely we get a very hard slab which crumbles but little as the bees work it.

I have made some slabs in paper boxes about the size of a cigar-box. These were placed two in a hive, candy side up. The bees come up between the two slabs, and work the candy from the top. This is very satisfactory.

SOME SWARMS THAT DID NOT CLUSTER UP IN HIGH TREES

BY W. L. CHENEY

I have been reading the Aug. 1st issue in regard to shinning up trees for swarms. The pictures show how obliging some of my swarms were.

I have 70 colonies, all in ten-frame hives. I am running for both comb and extracted

honey. We have a fine white-clover flow. I feel like telling every one to use the steam uncapping-knife. I would not go back to the old hot-water knife unless compelled to do so.

Mason, Mich., Aug. 4.

A PLEA FOR FARM BEEKEEPING

BY A. J. JAMES

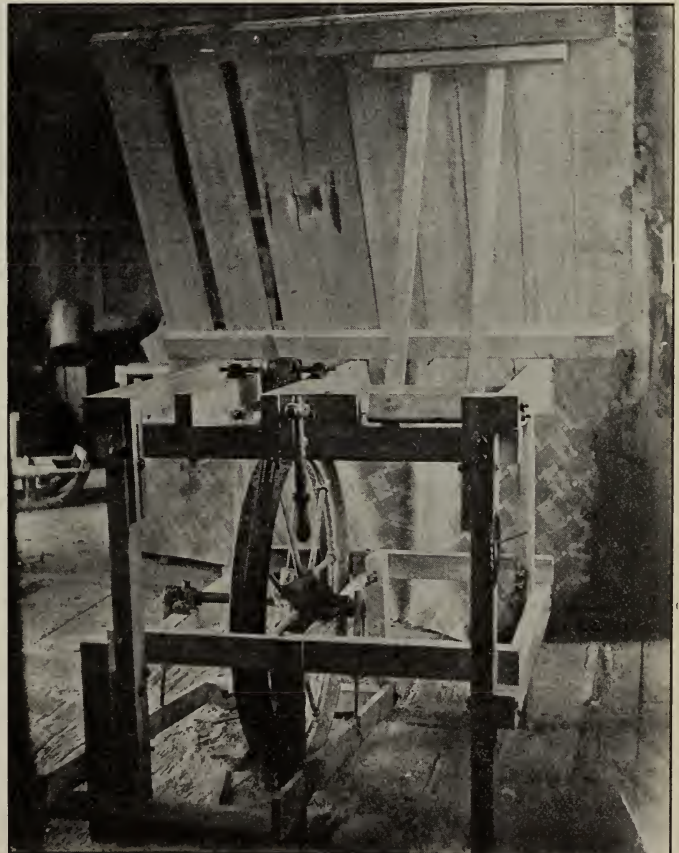
Beekeeping is essentially a rural pursuit, and it is but natural that bees should be found on farms. Bees and farms have been associated in the popular mind from time immemorial, yet, as a rule, the farmers have not done a great deal toward the development of apiculture. This work has been done largely by specialists who have devoted their lives to it. The farmers usually have so many other interests that it is not to be expected that they would become very extensive beekeepers. However, there is no good reason why every farm should not have a few colonies, at least, if only for the sake of providing the family table with one of the most wholesome and delicious sweets known.

The farm is the ideal location for an apiary. There the bees can be in close proximity to the nectar-bearing blossoms, and they will also perform an almost invaluable service by the fertilization of the plants they visit. The most extensive beekeepers have their apiaries in the country frequently on the farm of some one who, for a nominal consideration, lets another man's bees gather the honey which he could just as well have for his own. If the farmer himself has not the time to devote to the bees, it would be well to get the boys interested. It is a well-known fact that when the farmer boys have a few acres of ground to work for themselves they are not so anxious to go to the cities, and this idea would work out nicely with the bees by giving them a few hives for their own. Let them learn how to handle them, and reward their efforts by buying their honey for the table. They could thus earn their spending money.

Frequently the

women folks take care of the bees, and women do make excellent beekeepers. They can do all the work needed, except, perhaps, the handling of heavy hives and supers, and some of the men can usually be pressed into service for that. Bees make a fine combination with poultry-raising, and have made lots of pin money for the women.

Occasionally some writer holds forth with a glowing account of the large profits some one has made in the production of honey. It is true that quite frequently large profits are made, but usually by those who are experts in the business. The production of honey is not a get-rich-quick game, and there are ups and downs in that line of work as well as in any other. However, the farmer beekeeper with a few colonies will usually make enough honey for his own use



Foot-power saw made by N. H. Wilson, Derby, Vt. It is made of 2 x 3-inch maple, and the legs are 39 inches high. The top is 2 ft. wide and 3 long. The pieces are bolted together with $\frac{3}{4}$ -inch bolts.

with perhaps some to sell in almost any year, and when the extra good seasons come he will profit accordingly. One item to be considered is the increase in the number of colonies. In an ordinary year each strong colony will usually produce a swarm, or it can be divided, thus making an extra colony, which, in a good hive, will soon be worth from five to eight dollars.

Decide now that you will keep a few colonies at least. If you have had no previous experience, do not start on too big a scale, but let the increase of your bees and your knowledge of them go hand in hand. Many a promising beekeeper has made a failure by yielding to the temptation to purchase a good-sized apiary at a bargain when he knew little or nothing about the management of it. Five or six colonies will usually be sufficient to begin with, and after

experience is acquired, more bees can be purchased if the original stock does not increase fast enough.

Above all things, use only good, factory-made hives of a standard size and style. A miscellaneous lot of hives is considerable of a nuisance in an apiary. Uniform hives will be interchangeable, which is a great advantage, as it frequently becomes necessary to move them from one bottom-board to another, or to shift supers from one hive to another. There is no economy in making your own hives unless you are skilled in the use of tools, and can get lumber cheaply, and even then it will be better to buy the fixtures required for the inside of the hives, as they are made by machinery, and can be produced in a factory more cheaply than by hand.

San Antonio, Texas.

HELPS AND HINDRANCES IN DEALING WITH FOUL BROOD

BY J. W. STINE

Read before the Iowa State Beekeepers' Association at Des Moines, Iowa, December 11 and 12.

From the standpoint of a foul-brood inspector I will try to line up briefly the helps on one side in dealing with disease, and the hindrances on the other, and to come to some practical conclusion as to the situation in southeastern Iowa the past season. The Bible says, "No man liveth to himself, and no man dieth to himself." This is as true in beekeeping as in any other line of work. We are either a help or a hindrance to one another. This leads me to say that I believe the beekeeper himself can be either the greatest help or the greatest hindrance pertaining to the foul-brood situation. I quite agree with Mr. Pellett in what he says in his article, page 856, Dec. 1.

It is surprising how many we find who know little about the inside of a hive, and nothing at all of bee diseases. Then there is the man who thinks he knows all there is to be known about bees and is not willing to learn. He is the hardest to convince. One man whose bees we inspected last summer said he had known about foul brood for 25 or 30 years. But he let three colonies die that we had marked diseased, failing to treat them as we had requested. We had to take extreme measures, much as we were loath to do so, and burn one weak colony that we knew would not winter, before he would believe we meant to carry out the letter of the law. This is the most extreme case we have found, and as a rule we find the beekeepers ready to get all the information and help they can.

We recall one other instance when we did not see the owner, but the boys tried to pilot us around through the blackberry bushes and underbrush in the back yard and show us the bees. The boys watched at a safe distance, saying those were the crossest and blackest bees in nine counties. I proceeded to give the bees a good smoking; and the poor things, so unaccustomed to such a thing as being handled at all, scurried up among the combs in the old box, glad to find a place of refuge in the furthest corner. I lifted the box from its bottom-board and found it had been placed on top of bees and evergreen brush, and the poor little fellows had to make their way through that brush all summer to gain the inside of their home. I gladly removed the brush, and placed the box back on the bottom-board, and not one of those little blacks offered any resistance—but such a way to keep bees! It is just keeping them—it isn't caring for them. Not a frame hive was in the whole bunch, and the only way I could get a peep at their brood was to tip the boxes up or break a piece of comb out of the hive to examine it. It is nearly impossible to do even this in some cases, as the hives or boxes are nailed to bottoms, and some are so badly decayed that it is nearly impossible to handle. Thus we find in this case, as in many others, the man, the bees, and the hives are the greatest hindrances.

One of the greatest helps we have found is good foul-brood and quarantine laws

backed up by a loyal fraternity of beekeepers and friends. While the laws of the different States may differ somewhat, they are essentially the same so far as I have been able to ascertain. I believe Iowa has as good a foul-brood law as any State, and what we need most is a larger appropriation of money from the State to carry the law into effect in a general and educational way.

Two other great helps should be mentioned, and these are the bees and the hives in which they live. Mr. W. D. Wright, of Altamont, New York, has the following to say in an address on the subject: "The Italian Bee as a Factor in the Extermination of European Foul-brood," delivered at the New England N. S. and Canada bee-inspectors' convention at Amherst, Mass.,

Feb. 7, 1912. He said he always advised introducing the Italian bee wherever he inspected bees. At first the New York beekeepers were slow in using this method; but after using it a while they became very enthusiastic over the Italians. Some of the men used the dequeening method with Italians this year with good success. For several reasons I believe the Italians are better in fighting American foul brood. In regard to the hives, I will say I much prefer the ten-frame Langstroth hive to any other kind; but the main thing is to have the bees in movable-frame hives.

We have mentioned that the beekeeper is the greatest help, and I believe it is equally true that the beekeeper may also be the greatest hindrance.

EARLY SPRING FEEDING ADVISABLE ONLY TO PREVENT STARVATION

BY J. L. BYER

During the last three months of the year 1913 I received more letters asking for information along certain lines in beekeeping than I have ever received in any six months previous. Briefly the questions asked can be summed under three heads: Spring management, controlling swarming when producing extracted honey at out-apiaries, and wintering. These queries were in the main from beginners; yet some who have been in the business for years were inquiring about running out-apiaries, while others are contemplating changing from indoor to outdoor wintering. All replies were answered to the best of my ability (which is not saying that the parties got much satisfaction), and I have been thinking it might not be out of place to give the gist of these replies in GLEANINGS; for, although these subjects are all well worn in some respects, yet they are questions of a vital nature to our industry, and many things in connection with them will bear repetition.

In this article I shall briefly outline my notions as to best methods of spring management; and while I do not pretend that the ideas presented will meet with the approval of all beekeepers who live in northern latitudes, yet they have proved to be the best with me; so, after all, that is the only ground I have to make any claims upon. In fact, no one is justified in debating any thing from the theoretical standpoint alone, as experience is needed to separate the chaff from the wheat in all these debatable questions.

As we have often said, the secret of any successful system of spring management is

in doing the right kind of *fall* work. Having young vigorous queens in all the hives is one of the things to do in early fall. Packing the bees good and snug not too late in the season is another matter. But the greatest factor of all, aside from being sure that colonies have queens with vigor enough to build up rapidly in the spring when other conditions are right, is that I want the bees to have *abundance of good stores*. By "abundance" I mean enough to carry them through till apple-bloom, provided they are not able to get a bit of nectar before that season of the year. Some years, when the weather is favorable, the bees will get enough to keep things going in a way from the time early willows bloom; but such seasons are the exception, in our part of Ontario at least; and whenever the bees are stinted for stores in the spring the colonies do not build up as they do when they have "millions of honey" as friend Doolittle would say. Wintering outdoors exclusively, the first real work in the early spring is to see that snow is shoveled away from front of hives when weather is warm enough for the first flight. This is generally late in March or early in April, seasons varying a great deal one year with another. While I rather prefer snow around and over the hives previous to this time, yet after the bees have had a flight, if at all possible to do so I want snow kept free from entrances from that time on. After a flight, brood-rearing goes on rapidly; and with a fall of wet snow, as we are apt to get late in the season, damage is sure to result if hives are covered for any length of time. If at all

possible I like to shovel the snow away from the hives the night before I expect the bees to have a fly next day. If snow is shoveled away from the entrances during a cold sunshiny day, quantities of bees will rush out on account of the disturbance, no matter how much care is used, and be lost on the snow.

After the bees have had a flight I leave them severely alone for the time being, unless there is standing water in part of the yard; and in that case I scatter straw or other material over such places, as open water in an apiary in the early spring means the death of thousands of bees when they can ill be spared. Of course apiaries should be situated on a dry place; but often, with a heavy fall of snow going away rapidly, water will stand for a few days in places that are ordinarily dry. Watch for these places and save lots of bees during their first flights in the spring.

Although I want to have all colonies as heavy as already intimated, yet I always have a feeling in the spring that one wants to be *sure* that all have enough stores. Accordingly, as soon as snow is all gone so that one can get around the hives readily, I make an examination and see that every colony has sealed stores. This examination takes but a few moments at each hive, and not a frame is lifted in the work. I take off the covers of the cases and turn back the packing at the rear of the hive, rolling the quilt forward so as to expose an inch or two of the back ends of the combs. A few puffs of smoke are sent over the bees gently if needed. Often this is not even necessary, and a glance will at once show if the stores are there or not. Bees wintering outdoors always consume the honey from the front of the hive first; and rest assured, if no sealed stores are in evidence at the rear of the hive, the colony will soon starve if not attended to. In half a day a hundred colonies or more can be examined; and after the work is over, even if not a colony is found short, it gives a feeling of satisfaction to be sure they are all right.

If one is so unlucky as to find starving colonies early in the spring, the only thing to do is to feed in the way that is most convenient. If the weather is warm enough to allow opening of hives, full frames of honey can be given; but for temporary help I much prefer, in a case of this kind, to lay the frame of honey flat over the top of the bees till warmer weather comes later in the season. Candy made of sugar is a handy method of feeding; and as a last resort good thick syrup can be given in a feeder inverted over the bees, and all securely wrapped over to prevent heat coming from the hives.

In running a number of out-apiaries this work outlined is all that I want to do before fruit-bloom comes on; and as that introduces the swarming problem I shall deal with that feature in a future article. I am not in favor of early spring feeding nor manipulation of the colonies in any way. Needless handling of frames and bees early in the spring causes hundreds of good queens to be balled every year, and explains much of the queenlessness in strong colonies that have apparently wintered well. As to early stimulative feeding, even if I felt sure of its benefits in any way, it is entirely impractical to carry out any system on this line when out-apiaries are being looked after. Roads are bad at the season, bees are all packed in winter cases, and to feed hundreds of colonies away from home regularly would mean a great expense and a great amount of work. As I have no use for early feeding unless as an absolute necessity to avoid starvation, I think that those who are following this plan of early feeding are doing a lot of work for nothing. In the early spring bees need all their vitality reserved as much as possible, and experience has shown me conclusively that the feeding of syrup made of sugar, in the early spring, wears the bees out rapidly, with nothing gained to compensate for the loss of the bees or the cost of syrup fed. With normal wintering outdoors, and abundance of stores in the hives, our colonies that have good queens are always boiling over by fruit bloom, and in most seasons many have to be supered at this time to hold back swarming. What more could be desired, even if feeding did help? for who wants bees to get in the swarming mood before the coming of fruit-bloom?

I have been asked what amount of stores I consider necessary to carry colonies through till fruit-bloom. In answer, I can hardly give any thing definite. This winter we have 100 eight-frame Langstroth hives wintering outside in one yard—a hive altogether too small for my ideas, so far as my choice is concerned. About the middle of last October these bees were fed all they would take of syrup, the hives averaging probably 15 pounds of honey each, before being finished up with syrup. The larger hives were all made heavy, but none were given all they would take. As I rarely if ever weigh a hive, I can only guess at the amount given, and would estimate it at about 35 or 40 pounds of stores to each colony. After fruit-bloom we have a dearth for about two weeks, as a rule, and *then* it will pay, and pay *big*, to feed the bees—especially to see that all colonies have open stores enough to feed the great amount of

brood that will be present at that time in all strong colonies.

One other point that leads me to see the utter uselessness of early spring feeding is this: In my experience, colonies that are weak in the spring, and yet have a good queen, always have all the *brood* they can

care for, but are likely to be short in *bees*. If stimulative feeding is for the purpose implied by its name, to cause the queen to lay more freely, what good will this extra laying do if the bees already have all the brood they can care for?

Mt. Joy, Ontario, Can.

SOME DIFFERENT IDEAS ON SPRING FEEDING COMPARED

Feeding the Entire Amount Necessary, at One Time.

BY E. S. MILES

The subject of spring feeding is, perhaps, one that is about as little understood, and one about which there are as many different opinions as any question connected with our pursuit. Who has not heard the mysterious phrase "stimulative feeding," and who can say positively just what it means? One will tell you confidently that, if you feed a little syrup each day through early spring, even when the bees have plenty of honey in the hive, you will always have strong colonies for the harvest. Another will contend earnestly that, if you see that your colonies have an abundance in the fall—so much, indeed, that they will under no condition of weather run short, you will always have strong colonies for the harvest; and while you are turning these statements over in your mind, hopeful, perhaps, of an ultimate reconciliation, a third steps up and asks, "Did you ever see bees breed as they do when there is a nice flow from fruit bloom, and they have plenty of empty comb?" Now, these three statements do seem at variance at first thought; but, like many things we hear, there is truth in all, and the whole truth is there in the three propositions. There is, however, a little error mixed in the truth of these statements. (How a little error does hinder one from seeing the truth!) So if we are to get at the truth in this, as in any thing, we must begin by eliminating the error.

Experience has shown that, given a good colony of bees in a suitable hive, with good combs and an abundance of stores, so much that the bees will not use them all, no matter how bad the spring should be, they will breed up for the harvest. If this is true, there is an error in the first statement, and the bees build up, *not because* of the daily feeding, as claimed in it, but in spite of it.

But what of the question of a good flow and plenty of empty combs? Do not understand us as claiming the bees will build up under any circumstances, without all the comb the queen needs being available; and as we all know that empty comb alone will

not be sufficient to enable the bees to build up, it follows that it must be the flow, or, in other words, the feed. This brings us to the conclusion that we can do no better than to have a good colony with plenty of food, and leave it alone through early spring.

But another question arises: Suppose, through some misfortune, we find ourselves with colonies not in this ideal condition. Can we feed them after the manner of the natural flow? If so, how? I have done considerable feeding of bees, and under almost all conditions of colonies and circumstances of weather; and my experience thus gained has shown that it is impossible to obtain by feeding as good results as come from a natural flow. A little reflection will show why this is so. The necessity for feeding in spring arises almost invariably from bad weather, and bad weather aggravates the troubles of feeding. On this account, no doubt, we have found it difficult even to approximate, by feeding in bad weather, the results of a natural flow.

We have always observed that, when bees are fed, and especially the first time when they are short of stores, it creates a great excitement among them. If it is daylight they rush from the hive in great numbers, and without noticing, apparently, where they came from or where they were going. In bad weather, no doubt, many never return. If this is repeated day after day, is it any wonder the colony does not increase in strength? If we wait for good weather the colony may starve, and we would feed in any weather rather than allow that.

But if the ideal spring condition is, to quote an eminent authority, "Millions of honey at our house," and if from any cause we find ourselves short of this, why not bring it about by feeding enough at one time?

It may not be possible to do this by syrup feeding in the case of weak colonies; but with good fair colonies it is quite practicable. It must be mentioned in this connection that we have no use for any feeder

which does not allow the bees to take the food at a rapid rate. In our opinion, the Alexander feeder is pretty hard to beat for all practical purposes, especially if it is made large enough. Either have it large, or put two feeders on at one time. In case it becomes necessary to feed, we put on the feeders; but unless the weather is warm enough for bees to fly perfectly, we feed only in case we fear starvation unless circumstances are so we can feed after dark. Then when the first good day comes we prepare enough feed to feed each one enough to last it till there is flow enough to supply the needs as nearly as can be foretold.

If it is early in the spring, and the chances are that they will not gather much for some time, we begin in the morning and feed right along all day, or until they have enough. We find, by this way of feeding, that there is not so much trouble with robbers as where just one feed is given, for the bees soon become gorged, as in a natural

flow, and while in this condition no robbing need be feared.

After this kind of feed they will care for all the brood they can keep warm, which is all one can get under any method of feeding. If, after one of these feeds, we find we have misjudged the future, and the bees begin to gather, it is not a hard job to slip out a comb or two and give empty ones in their place; or if the colony is good, give it a super of combs, preferably a shallow extracting-super. It is surprising how much the bees will use, and how much brood they will mature under this treatment. We like this way of feeding, especially for outyards, for we can fix a yard in one day so it will not be necessary to visit it again for two or three weeks.

In conclusion we should like to ask those who have been feeding after the old way, a little at a time, to try this way on a part of their colonies, and see if it is not an improvement over the old.

Dunlap, Iowa.

CRUSHED OIL CAKE AS A SUBSTITUTE FOR POLLEN

BY R. J. T. MUCKLE

Last spring, 1913, was cold so long that no pollen was to be had, and the colonies were dwindling rapidly, the queens ceasing to lay. I tried flour, corn meal, oatmeal, and finally shorts, and was gratified to see that in this latter I had got something the bees scrambled for. My nephew, for fun, put out crushed oil cake, and from that moment even the shorts were almost deserted. Queens began to crowd the combs with eggs, the bees of which are not only the largest, and incidentally the brightest-colored Italians, but as gatherers of pollen and nectar, and builders of whitest caps,

the best yet produced in the many years I have been a bee devotee.

Flax seed subjected to pressure separates an oil, as you know, leaving in the press a cake of fibrous nature. This is then put through a crusher and becomes the "crushed oil cake" that I use.

This is of immense value in feeding stock. It contains about 50 per cent of protein, and is on this account, I believe, peculiarly suited to the rapid maturing and intense energy of our short-lived friend the honey-bee.

Claudeboye, Manitoba, Can.

FOOD ANALYSES; DIFFERENT FOODS COMPARED AS TO PROPORTIONS OF ACIDS AND ALKALIES

BY E. P. ROBINSON

A number have written for more detailed information than is given on p. 904 of the Dec. 15th issue, regarding food values, how the numbers 1860 and 4220 are obtained, meaning of last column in table, etc. As other readers may also have failed to understand the table fully I write these few lines instead of replying to the letters personally.

The analyses given were obtained from bulletins published by the United States Department of Agriculture, and may be had

by applying to Senators or Representatives in Congress, or by paying a small price.

The figures 1860 and 4220 are accepted by nutrition experts as about the correct number of calories to be obtained from a pound of protein, carbohydrates, and fat when fully digested. A calory is the accepted unit of heat, amount necessary to raise the temperature of one gram of water one degree centigrade.

The figures given in the last column are

merely the result of division of calories or food value of each food by its cost in cents. Take sugar for instance: 1860 calories divided by 5, cost in cents of one pound, gives 372 as the number of calories, or units of heat value, for each cent expended. The last column was headed "Value per cent." If it had been expressed "Value for each cent" it would have been clearer.

Another point not usually considered by students of nutrition is the matter of balance of mineral acids and bases. It is now quite well agreed that an acid (inorganic acid) condition is obnoxious in the nutrition of both animals and plants, and to be avoided so far as possible. Acid soils are neutralized or sweetened by applications of lime, and stomachs are sweetened by doses of soda and magnesia. With knowledge and care in eating, this acidity may easily be avoided, many desirable foods being highly alkaline, as may be seen by the table below.

A preponderance of mineral acids over bases in the diet may result in malnutrition and underdevelopment of the bones, and therefore of the stature and size of the growing child or animal. Rheumatism, diabetes, fevers, rickets, and acidosis also are results of an excess of mineral acids in the

food, as compared with mineral bases. It should be carefully observed that it is mineral (inorganic) not organic acidity that is so injurious, the latter rarely proving obnoxious. An oddity occurs in not a few of our fruits and vegetables, they being highly acid organically, and still more highly alkaline inorganically. Rhubarb is an example, about the highest in organic acidity, and nearly the highest in inorganic alkalinity. It may be stated that all meats and cereals are acid inorganically, while all fruits and vegetables are alkaline. White bread has over four times as much excess inorganic acid as oatmeal. All who eat meats and cereals should also eat liberally of vegetables and fruits.

MINERAL ACIDS AND BASES OF VEGETABLE AND ANIMAL FOODS.

	Mineral Bases	Mineral Acids	Excess Base	Excess Acid
Eggs	484.9	517.8		32.9
Oatmeal	236.4	279.2		42.8
Beef	588.2	712.9		124.7
White bread	192.	364.1		172.1
Chicken	619.7	801.2		181.5
Cow's milk	971.14	678.0	293.14	
Onions	886.1	336.8	549.3	
Rhubarb	2581.7	886.0	1695.8	
Spinach	3670.2	1051.3	2618.9	
Tomatoes	5216.6	1512.1	3704.5	

Packer, Ct.

PRACTICALLY NO MUSTARD GROWN IN THE UNITED STATES

BY GEO. J. FRENCH

We have had the pleasure of reading the letter from J. H. Calkins (p. 38, Jan. 1) in which he inquires whether mustard is grown in the United States in a commercial way. What is ordinarily called mustard seed, in our fields, is not mustard seed, but is either wild rape seed or charlock. The only place in the United States where mustard is grown commercially is in the Lompoc Valley in California, and very little is grown there.

The best mustard seed in the world comes from England. There is some grown in Holland, a great deal is grown in Russia, and there are shipments from Italy and Austria; in fact, the seed is cultivated all over the world, particularly in the East, for its oil, which is used as an article of food, the expressed oil of mustard being bland and mild—a delicious salad and cooking oil. The strength, so called, of the mustard, is contained in another oil, which can be taken from the seed only by distillation.

The best mustard flour is not simply ground mustard seed, but is the extracted

flour of various mustard seeds, blended to produce the greatest result in the volatile principle of mustard, which is required in the perfect mustard flour.

We note that Mr. Calkins wants to get in communication with the growers—but there is no one who grows mustard flour; there is one kind of seed grown in the United States, as per the above.

We think in these times of the high cost of living, that Mr. Calkins' ambition to get close to the first cost is a most commendable one. GLEANINGS IN BEE CULTURE has awakened a fondness for honey in my own immediate family, and we have bought honey and had honey given to us, and this spring we are going to get closer to the source of supply, just as Mr. Calkins wishes to do—we are going to keep a hive of bees ourselves.

Rochester, N. Y.

[As our correspondent is president of the R. T. French Company, makers of mustard bran, etc., we are sure that he knows whereof he speaks.—Ed.]

REPORT OF THE SOUTH DAKOTA BEEKEEPERS' CONVENTION

BY GEORGE F. WEBSTER

The convention was held at Vermilion, Jan. 21, and was a most successful meeting. President R. A. Morgan called the meeting to order at 1:30 P. M., and Geo. F. Webster, of Sioux Falls, was called upon to discuss the subject of bees on the farm. He pointed out that bees are as necessary to the farm and orchard as the flowers are to the bees. He mentioned also the desirability of having honey on the farmers' table in place of the unwholesome glucose syrups, and the pleasure which may be derived from handling and working with bees for any one who has the taste and time for the work.

W. P. Southworth, of Sioux City, gave an interesting talk on experiences and expenses of marketing honey, which was to the point and well received.

F. A. Dahl, of Gayville, described how he produced his big crop of fancy comb honey, having supers piled nine high on some colonies.

T. M. Goddard told of his success with feeding sweet clover, both green and dry, to all kinds of stock, and had found no trouble in getting them to take hold of it with a relish.

Dr. E. A. Morgan, who has had extensive experience as a beekeeper and queen-breeder in the Northwest, led a very instructive discussion of foul brood, giving his method of using the McEvoy treatment, which must prove helpful to those who are having trouble from that source.

The afternoon session closed after it had been decided to hold a picnic next summer at either Vermilion or Gayville—time and place to be decided by the president and secretary.

The evening session was called to order at 7:30, the program opening with the president's annual address, which showed that

the speaker had made the subject, "Does it pay to keep bees?" one of deep study, presenting many facts and figures to prove that honeybees indirectly keep the wheels of commerce moving by making possible great crops of fruit and grain and vegetables. He showed that, as "all flesh is grass," and that as all vegetation is derived from seed, all flowers have to be fertilized in order to produce seed; and the honeybee is one of the principal factors in producing perfect pollination. If the facts put forth in this discourse could be understood by the general public the beekeeper would be hailed as a benefactor.

The subjects of extracted honey, wintering bees, split sections, chaff hives, etc., were taken up, and proved so interesting that a motion to adjourn had to be suggested by the janitor touching the button, causing the lights to blink.

The election of officers resulted in a unanimous vote to retain the present incumbents, R. A. Morgan, of Vermilion, President, and L. A. Syverud, of Canton, Secretary and Treasurer.

Vermilion was selected as the place for the next convention, to be held early in December.

The following among others were present, nearly all of whom took part in the discussions:

Mr. Byerhoof, Geo. Carpenter, Miss Alice Cope (County Superintendent of Schools), Dr. and Mrs. Cotton, Alonzo Cotton, Andrew Dahl, T. M. Goddard, M. L. Mickelson, Dr. E. A. Morgan, Mr. and Mrs. R. A. Morgan, Miss Edna Morgan, W. P. Southworth, L. A. Syverud, Mr. and Mrs. W. A. Vincent, George F. Webster, and T. R. Walker.

REPORT OF THE WASHINGTON STATE BEEKEEPERS' CONVENTION

BY J. B. RAMAGE

We beekeepers of the State of Washington have just held our 20th annual convention. It was the best in the history of our association. In point of numbers, enthusiasm, educational benefits, and good fellowship, we had a larger attendance than any previous convention, and the enthusiasm was at high tide at all times. Every paper and talk was instructive, and every one enjoyed the presence of the others.

We had the pleasure of having with us

Mr. and Mrs. J. B. Espey and daughter, from Iowa. Mr. Espey gave us a short method of curing American foul brood without wasting so much valuable comb and foundation. His talk was very instructive. Mrs. Espey read a paper on why women should be beekeepers. It was also a valuable paper.

Our oldest member who has been a continuous beekeeper, Mr. Anson S. White, Cowichee, Wash., told us how he increased

from four colonies to thirty, and secured 730 lbs. extracted honey. One of the lot was evidently very weak, and has died. All the rest are strong, and have a large winter supply of food. Mr. White has resided on the same farm for the last thirty years, and has kept bees nearly all the time, producing honey by the carload. He is one of the pioneers in the county. Mr. White and Mr. Leigh R. Freeman, editor *Northwest Farm and Home*, are the only ones left of the original members of the association.

All the papers were full of good wholesome instruction, and created a good deal of discussion, especially when the care of alfalfa and sweet clover was mentioned.

Just before the noon hour the secretary called the officers to their feet in front of the members and presented them with the badges of their office, which, he stated, had been generously donated by the proprietors of the *American Bee Journal*. After which tellers were appointed to take the names of all present and give them a badge neatly printed as follows: "Annual Convention Washington State Beekeepers' Association, North Yakima, Wash., January 7, 8, 1914." Every one present offered a vote of thanks to the donors.

The afternoon and morning of the second day were full of discussions, and filled in by music by friends of the association. The piano was generously loaned us by the Sherman-Clay Music Co., the manager being one of the singers.

The banquet was a success in every way. After the toasts the election of officers took place.

The following officers were elected:

E. E. Starkey, Prosser, President; Lee G. Simmons, Ellensburg, re-elected Vice-president (third term); Gus Sipp, Selah, re-elected Treasurer (second term); J. B. Ramage, North Yakima, re-elected secretary (fifth term).

Three new members were added to the list, with promise of more soon. The president, secretary, and C. W. Higgins were elected a legislative committee to draft the foul-brood law and have it presented to the legislature in January, 1915, and do what they could for its passage.

When the convention adjourned, the happiest bunch of beekeepers separated which it has been my lot to be associated with in my beekeeping experience.

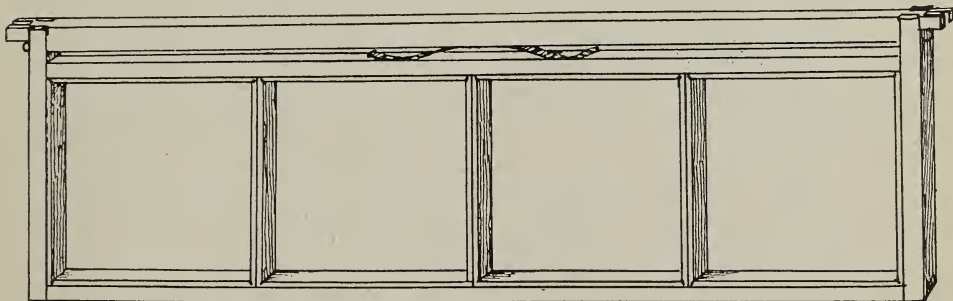
North Yakima, Wash.

A NEW WAY TO USE THE NEW SPECIAL SECTION SUPER

BY CHARLES HOWELL

I have been putting the new special super to a test for two years for fancy comb honey, as I wanted to use a section-holder that would protect the section all around, and I find some difficulty in getting the sections out of the frames. Furthermore, I do not like the odd-sized sections. Both

gives the four sections good compression, so that one can handle them as easily as brood-frames. I do not tier up, as I can easily take out finished sections and fill in with empties, so this is a big saving. The $\frac{1}{4}$ -inch bee-space above sections is a great help to the bees in doing fine work.



objections I have done away with without making any change in any of the fixtures.

By using the $4\frac{1}{4} \times 4\frac{1}{4}$ plain section in the frames made for the $4\frac{3}{4}$ sections I place a slat 17 inches long on top of the sections held in place by one super spring, which

I do not think there is a super made that can beat it. One can finish up all his $4\frac{3}{4}$ sections all in the same super until they are gone, produce chunk or extracted at the sides if desired, and still be using regular fixtures.

Hackettstown, N. J., Jan. 5.

COMMENTS ON SOME RECENT STATEMENTS

BY J. T. BOWEN

HOW LONG HAS THE SMOKE METHOD BEEN USED?

A unanimous vote of thanks is due Mr. A. C. Miller for his smoke method of introducing queens. Nearly 3000 years ago Mr. Solomon said there was nothing new under the sun. At said period milk and honey was an article of food, so may be Mr. Solomon or his apiarists knew all about smoking in the queens; at any rate, Mr. R. F. Holtermann has been using it over 30 years, page 902. Mr. Hopper, of Jamaica, West Indies, of queen-rearing fame, used the same practice—to what extent I don't know; but in 1905 I saw his colored assistant run in queens at the entrance with smoke, sometimes rolling them first in honey.

FLOODED BEES.

Blessed be the beekeeper who has no need of a bee-cellar and no fear of snowstorms. Page 5, Jan. 1, Dr. Miller is found dreading in what condition he will find his bees in the cellar on his return home; and the A. I. Root Co. is digging colonies from three feet of snow. But "man is born to trouble as the sparks fly upward." December 30 it rained and rained, and then rained some more. The following morning found every one of my 145 colonies under water from 2 to 6 inches. Three were floating abroad. Still it rained; but a big day's work lifted them on to their stands. I feared a tremendous loss. January 8 was California weather. Every colony seemed on a rampage. Even the three that went swimming suffered no harm beyond that of moldy combs.

Page 731, Oct. 15, 1913, John Pashek uses $\frac{1}{4}$ -inch mesh to keep out mice. I should think the bees would have a hard time in carrying out their dead. I use $\frac{3}{8}$ -inch, which is mouse-proof, and offers less inconvenience to the bees.

A GOOD RECORD BY A BLACK COLONY.

On page 728, Oct. 15, A. P. Haberecht has an apiary ranging from pure blacks to golden Italians, and as honey-gatherers finds no difference. My 145 ten-frame colonies are a similar mixture. My record colony gave me two big swarms (i. e., Alexander), and seven supers of extracted. I run eight frames in supers. The queen was so black I thought I would end her career in the spring, but hated to do so, as she was beating every other queen at laying. Her progeny were like their mother—not a

yellow streak to indicate any trace of Italian blood. With such a record, hands up of those who would advocate changing such a queen for an Italian or any other foreigner!

On page 843, Dec. 1, Arthur C. Miller says bees don't sting dead things. Don't you believe it, Mr. Miller. Once in Jamaica, W. I., I threw away a dead rat—yes, sir, really dead. Accidentally it struck a hive. A few seconds later, not knowing the cause, you might have sworn that colony was swarming. They settled in a heap on that poor dead rat. If they were not stinging it, then what under the sun were they doing? Not till I pulled it away with a long stick did they become tame.

LIVING TO BE 100 YEARS OLD NOT YET OUT OF FASHION.

A. I. Root expresses a hope that he will live to be 100 years old. That should be easy so long as he continues to behave himself. My grandmother went home at 102 years, after bringing up to maturity 14 children. My great-grandfather went to sleep with his fathers at 100. Both were of English stock. Neither of them was a student of dietetics. They took no thought what they should eat or what they should drink.

GREAT DIFFERENCE IN COLOR OF ALFALFA HONEY.

I wonder if Bro. Chadwick is still of the conviction that alfalfa honey is always one and the same color. This is a purely alfalfa district, dependent solely on irrigation. Wild flowers have long since passed before the honey-flow, hence there is absolutely nothing to give coloring to the nectar; yet between the first and last extracting the difference in color is so pronounced that ancient Isaac, whose sight was so dim he didn't know Esau from Jacob, could, I think, make a good guess as to which was light and which was dark. If the above is not so, then I must be color-blind or I need an oculist.

BEES CHASING BLACKBIRDS.

Has anybody ever seen bees chase blackbirds? In this valley we have millions. The past season I have repeatedly noticed a bee apparently making a desperate effort to overtake one of these birds. Whichever way the bird would twist, the bee would follow. Dixon, Cal.

Heads of Grain from Different Fields

A Vision of Spring

The trees still stand naked and brown and bare,
With never a leaf showing anywhere.

The snow's piled deep, and the winds are chill
As they sweep o'er the orchard upon the hill.

The bees are housed in their quarters snug,
With plenty of honey for each small "bug;"
And they scarcely hum; they're almost as still
As the giant trees upon the hill.

But we'll shut our eyes, and in vision see
How the spring will alter each bare brown tree.
See! out from their cozy cradles come
The leaves and the flowers, one by one,

Till even the tiny gurgling rill
Will sing of the fragrance upon the hill.
Then deep in their hearts, 'neath the pollen gold,
The blossoms a promise of fruit will hold.

And, courting the blossoms, we find the bees
In the branches swayed by a Maytime breeze.
In the happy hum of the bees we hear
The promise of honey to eat next year.

Though the trees are bare, and still the bees' hum,
We know that the glad spring in due time will come.
Gladwin, Mich. IRMA TRUE SOPER.

Trouble in Making Hard Candy

I have been trying to make hard candy for bees according to the instructions given in GLEANINGS. It is easy enough to boil it down to the consistency you recommend, but it is difficult to do so without darkening the candy and having it go back to sugar. I have tried to make it several times, and each time I got a cake of sugar about the color of goldenrod honey. Some of these experimental batches were boiled briskly, and others very slowly; but in each case the result was about the same. It is not fit for bees. If you can give any further information it would be appreciated.

St. Paul, Minn., Jan. 9.

SUBSCRIBER.

[We are not sure from what you say that your candy is unfit for the bees. Goldenrod honey, owing to the fact that it is so often not pure goldenrod, varies in color from quite light to quite dark, so your comparison is not definite. The candy, as we make it, is considerably darker than most clover honey, but not dark enough to be called a dark amber. It might be called light amber, but, of course, this also is somewhat indefinite.

When you place a little of the candy in your mouth you should not be able to detect at once a strong scorched or burnt taste. We have just been eating some of our candy, and we find after it has remained in the mouth a few minutes it is possible to detect a slight taste along the caramel order—a pleasing taste rather than a scorched burnt taste. If your candy has a distinctly burnt flavor we are sure that you boiled it too fast or else too long. Perhaps you added too much water in the first place, so that it required too long exposure to the heat to evaporate it to the right consistency.—Ed.]

The 4x5 Sections Used in a 4¼ Square Section Super

I am using 4x5 sections in an ordinary super made for 4¼ square sections without any change in the super except strips nailed to the upper edges to make the side walls the proper height. Instead of putting a false end in each end of the super to take up the extra space I make a special fence, the end cleat on one end of which is enough wider to make the fence reach from one end to the other of the super. The section-holders are also a little different,

one upright being nailed far enough from the end of the bottom-bar to be just right for the four sections.

I use the 4x5x1¾ sections in the same supers formerly used for the 4¼ square section. At any time if I should want to use the latter again it will not be necessary for me to pry out any false ends in the supers, nor to make any other alterations.

I use a top-bar over the sections, so that I really have wide-frame section-holders. I find that this keeps the sections cleaner, and saves lots of scraping.
San Jose, Cal. W. A. BARSTOW.

Granulated Sugar Not Suitable for Queen-cage Candy

Being a subscriber to GLEANINGS, I am presuming on that fact to address you. I also have your A B C book. In looking over its columns, I note the formula for making "Good" candy. I find that the common granulated sugar is not a success in making this candy, as the crystals will not dissolve. I have plenty of pulverized sugar, but fear to use it on account of the small quantity of starch or flour that all this class of sugars contains. Would the common unrefined brown sugar do? I note a late formula in GLEANINGS for making candy, but can not get all of the ingredients. What shall I do?

Berea, W. Va., Jan. 1.

J. E. MEREDITH.

[It is not practicable to make Good candy using granulated sugar or even brown sugar. The only thing that you can use is pulverized sugar. Usually you can secure this without any starch in it. It is very possible and even probable that the pulverized article you refer to has no starch in it. We suggest that you try making it according to the directions given in the A B C and X Y Z of Bee Culture. In the mean time, if you desire candy for feeding bees during the winter we refer you to the hard candy referred to in GLEANINGS. See Jan. 1st issue.—Ed.]

Wintering Bees in a Room with an Open Window; Deep vs. Shallow Frames for Wintering

Would it be practicable to keep two or more colonies of bees in a building 15 feet square, using a window four feet square as a common entrance? Other conditions being equal, should bees winter better in deep or very deep frame hives than in shallow-frame hives?

Marlboro, N. Y., Dec. 8. CHAS. E. DOWLING.

[It would not be impossible to keep bees in a room with an open window such as you describe, but we do not believe it would be advisable. The bees, after a time, would get accustomed to going into this opening, and then into their individual hives; but the difficulty would come at the close of the day when it became so dark that the bees would not be able to locate their entrances properly, and on that account would not fly out very early nor very late in the day.

The time was when it was thought the bees would winter better on deep frames or square frames than on shallow ones; but if one shallow hive is placed on top of another the advantage is in favor of the shallow frame. The bee-space between the two sections makes it possible for the cluster to reach the stores in any part of the hive, and at the same time provides a fine clustering-space.—Ed.]

The Heat of a Solar Extractor

Is the heat in a solar wax-extractor detrimental to the wax? It has been asserted that the heat generated causes the wax to be too brittle for foundation. I have never tested the heat in mine, but it must go over boiling-point of water, I think. I will note it

when we get a really hot day. Mine is 2 1/2 ft. deep, and there are two sheets of glass with an inch air-space between.

St. Albans, Christchurch, N. Z. E. G. WARD.

[Heat from a tropical sun where a double glass is used in the solar extractor will sometimes scorch wax; but nowadays a single glass is used almost universally. Years ago, with a double-glass machine we fried eggs, and raised the temperature nearly up to the boiling-point. As wax melts at 140 degrees the wax might be burnt if retained too long in the machine.—Ed.]

The Quarantine on Bees in Imperial Valley, California

Mr. Editor:—It would seem to me, after reading your issue for Jan. 1, that a few words from me would not come amiss. One J. Egar Ross, a part of whose letter you published, presumes to take up the cause of a few disgruntled beekeepers and writers who were trying to override an ordinance in force in this county by bringing in bees in violation of a quarantine. This letter was published in full in the *Western Honeybee*.

Space will not permit me to go into his letter in detail, so I will take up the most of the important points.

He says great injustice was done to a party who shipped in a carload of bees. Nearly every beekeeper in this county knew that these bees were coming in to test the law, and fully expected to take this into the courts, and that the railroad company refused to deliver them to the consignor, as I held the railroad company responsible for violation of quarantine, and they returned them to the consignee after keeping the wires hot three or four days.

I acted only in the capacity of an officer doing his duty, of which the owners were fully aware. The question as to whether they were healthy or not never entered the case; but they came from a quarantined county.

He goes on further to state that I permitted some to come in while I objected to others. Again he is silent as to the reason for this apparent partiality. This was before the quarantine was established, and was like this: The ordinance leaves it to my discretion as to whether or not bees could be brought in. There were certain counties that I accepted a bill of health from without question, and others I was not so ready to accept; and I explained my position in each case. Personally I treated all alike, without fear or favor.

Now as to the dog-in-the-manger argument. If the beekeepers were not afraid of importing disease would they not have gone out and bought up these cheap bees? They have as good a business instinct, and are as anxious for bargains here as anywhere else.

One more point: Mr. Ross puts himself up as an expert on bee diseases. The fact is, he did not know American foul brood when I showed him a case in his yard last spring.

I think Imperial Co. has gained a great point in the enforcement of this ordinance for which they have a progressive board of supervisors and district attorney to thank by standing back of the beemen, for which the beemen are very appreciative.

A. F. WAGNER, Inspector.

El Centro, Cal., Jan. 21.

Twin Mating Nuclei with Three Combs on a Side

I am making up a supply of twin mating-boxes a little different from any thing I have seen. I am making them with loose bottom and loose central division-board fitting in grooves cut in the ends and resting on the bottom-board with division-board out. They take seven frames the same size as the frame

in the Root twin mating-box, the only difference being a long top-bar with division-board in. They take three frames to a side, making a nucleus with comb area the same as one standard L. frame. Three of these boxes united, with division-boards out and frames substituted, make a colony for winter with comb area the same as seven standard L. frames.

Liberty, Tenn., Dec. 15.

J. IVAN BANKS.

[Your form of twin mating-box is almost the same as the one that we are using in our own yard. We started out with the idea of making the central division-board removable. It is of very thin stuff, and slides down into corresponding grooves in each end-board of the nucleus box. While these can be removed very readily when the hives are new, it is practically impossible to get them out when they are stuck up with bee-glue. We find it perfectly practicable to run the twin nuclei side by side, and there is really no need of withdrawing the central division-board except at the close of the season. A plan could be readily devised for making the division-board easily removable, even though it were covered with propolis at the end; but it would be quite expensive.—Ed.]

Bees Working on Sawdust for Pollen

A few days ago I sawed 20 cords of green wood. To-day is a warm shiny day, and the pile of sawdust is entirely covered up with bees. They seemed to be gathering pollen so far as I could see. I noticed some of them had a good bit of pollen on their legs. Never before have I seen bees after sawdust.

Roanoke, Va., Jan. 22.

HENRY S. BOHON.

[During a dearth of pollen, when the bees are fairly crazy for it, they will make things pretty lively about stables where bran is kept, or about a barn where there is an accumulation of screenings, etc. We have heard of bees working on sawdust, although not very often. Whether they really get a nutritious substance that they can use in brood-rearing, or whether they are deceived, we do not know. It is hard to imagine any thing nutritious for young brood in sawdust.—Ed.]

No Bad Results from Feeding Thin Honey in the Fall

I have read the article on feeding sugar syrup by J. E. Hand, Dec. 1, p. 858. I consider this an important question, but it seems to me Mr. Hand is mistaken in his claim that the bees do all the evaporation while on the wing. If so, why do we find thin nectar in the extracting-super, and that, too, when the bees are gathering only a little.

I have never fed such thin feed, but for a number of years I have practiced feeding back honey thinned to the consistency of nectar, through the month of September, for the purpose of finishing sections, and have never experienced any winter loss from those so fed. On the other hand, I sometimes lost 15 per cent of those not fed, which has led me to believe that fall brood stimulation is good. Last fall I fed all my bees half a pint of thin honey each night from Sept. 17 to Oct. 4, the result of which I shall watch with interest.

Durkee, Ore., Dec. 13.

J. O. BAIRD.

Color of Alfalfa Honey Differs with Successive Crops

P. C. Chadwick, of California, holds to the opinion that one kind of flower gives but one sort of honey so far as color and flavor go. He would not think so if he lived in the Pecos Valley. As alfalfa is our only honey-plant through the summer, how is it then that the nectar from the first and second crop is amber, at least, while the third crop's honey is water-white?

Dexter, N. M.

C. VANDEN BOUT.

Our Homes

A. I. Root

Be glad in the Lord, and rejoice, ye righteous, and shout for joy, all ye that be upright in heart.
For of such is the kingdom of heaven.
And a little child shall lead them.—ISAIAH 11:6.

A year ago I told you about being happy over a Christmas present—a little bag of dasheen tubers that came in the mail on Christmas eve from the Department of Agriculture of our nation—*God's gift*—and I believe it *will* prove to be a precious gift to hungering multitudes. Well, I have just received another new and most precious gift; but it is more along in the line of spiritual blessings than either food or raiment. When some kind soul sends me “a book to read,” of late years, I almost always feel a bit sorry; for how can I read *books* when the news of the world's progress lies untouched before me, week after week, and often month after month, because I *can not* get time and still take the exercise in the open air I must have. I have tried several times to read current fiction; but almost every time, after wasting precious moments, I have said invariably, “Why do ye spend money for that which is not bread, and labor for that which *satisfieth not*?” Christmas eve came, and several books. Among them was one entitled “Pollyanna, the Glad Book,” by Eleanor H. Porter. (L. C. Page & Co., Boston.) I believe it first came out in the *Christian Herald* in 1912. Since then it has, during the first half of 1913, undergone “eight impressions.” I read the first chapter and said to Mrs. Root, “This book is different.” Although it is of late hard for me to read any thing more than about half an hour at a time, the book was finished next day. Then I turned back to the beginning and proceeded to *read it all over again*, for the latter part threw a new and unexpected *radiance* (yes, that is the word) over the whole book. In one sense it is *not* a “religious” book. I don't think a text is quoted, nor is there any mention of the Bible, until near the last part. It is a unique creation. May God be praised for the woman whom he has commissioned to deliver this message to an *unhappy* and hungering world.

Before I can deliver *my* “message” I shall have to give you a brief sketch of the book. My sketch won't spoil the book when you come to read it. Briefly, the well-to-do parents of a bright young girl planned to have her marry a rich young man; but she preferred a young and perhaps obscure young preacher. They stormed, and threatened; but, like Moses of old, “choosing

rather to suffer affliction with the people of God than to enjoy the pleasures of sin for a season,” she cast her lot with the young pastor, and, disowned by her family, they two moved out west and he began with the customary small salary. In the eyes of the world he didn't seem to be very successful. Oh, dear me! how little does the *world* know! Two little girls were born—“Polly” and “Anna;” but both soon died; and after giving birth to another, named Pollyanna, the poor unfortunate mother died also. When the last little girl was eleven years old, the overworked and poorly paid pastor died also, with nothing left for the poor child but a few things that had come in “a barrel” from some “ladies' aid” society. They found the child had only one relative living—her aunt Polly, who was living an idle, unsatisfied life, and who had not, after all these years, forgiven her poor sister's “want of sense” in marrying a preacher without a cent in the world. Now, this poor preacher who lacked fame and renown, and the things of this world, was (especially before he died) rich in God's Holy Spirit, and he spent the last days of his life and his last remaining *strength* in instilling into the heart and mind of that eleven-year-old child the riches of God's holy kingdom. Happy as a lark, she started out on her mission, the ladies' aid society paying for a ticket to her Aunt Polly.

Now this wise father, recognizing how difficult it is to teach children spiritual things, had been teaching the motherless girl a little “game,” as he called it, and this game was to try to find something to be “glad” about, no matter what comes up. To illustrate: When the child first came, her aunt, who prided herself on her fixed rules and promptness, told Pollyanna to be sure to be on hand when the supper-bell rang at six o'clock; but the child was away off in the fields, admiring her new home. As a punishment she was told she could have only “bread and milk” in the kitchen with “Nancy.” To her aunt's great surprise, and almost consternation, she replied, “Oh! thank you, Aunt Polly. I just *love* bread and milk, and I love Nancy too; and you needn't feel bad about it, one bit.” In fact, her little life was just full of the beautiful text commencing “Rejoice and be glad;” and that was not all. She commenced at once teaching every one, young and old, rich and poor, the beautiful “game,” as she called it, of being “glad” *always*. By accident she ran across a poor discouraged minister

in her new home. He had gone off into the woods to pray. His deacons were in a quarrel. Three of the best workers in the "ladies' aid" had withdrawn; the choir had "split;" the officers of the Endeavor Society were in a jangle; and the Sunday-school superintendent had resigned; and while he was praying over the troubles, God sent Pollyanna as an angel of light to his troubled soul. Here is the way the book tells it:

"Do you like being a minister?"

The Rev. Paul Ford looked up now, very quickly.

"Do I like— Why, what an odd question! Why do you ask that, my dear?"

"Nothing—only the way you looked. It made me think of my father. He used to look like that—sometimes."

"Did he?" The minister's voice was very polite, but his eyes had gone back to the dried leaf on the ground.

"Yes, and I used to ask him just as I did you if he was glad he was a minister."

The man under the tree smiled a little sadly.

"Well, what did he say?"

"Oh! he always said he was, of course, but 'most always he said, too, that he wouldn't *stay* a minister a minute if 'twasn't for the rejoicing texts."

"The—*what?*" The Rev. Paul Ford's eyes left the leaf and gazed wonderingly into Pollyanna's merry little face.

"Well, that's what father used to call 'em," she laughed. "Of course the Bible didn't name 'em that. But it's all those that begin 'Be glad in the Lord,' or 'Rejoice greatly,' or 'Shout for joy,' and all that, you know—such a lot of 'em. Once, when father felt specially bad, he counted 'em. There were eight hundred of 'em."

"Eight hundred!"

"Yes—that told you to rejoice and be glad, you know; that's why father named 'em the 'rejoicing texts.'"

"Oh!" There was an odd look on the minister's face. His eyes had fallen to the words on the top paper in his hands—"But woe unto you, scribes and Pharisees, hypocrites!" "And so your father—liked those rejoicing texts," he murmured.

"Oh, yes!" nodded Pollyanna, emphatically. "He said he felt better right away, that first day he thought to count 'em. He said that if God took the trouble to tell us eight hundred times to be glad and rejoice, he must want us to do it—*some*. And father felt ashamed that he hadn't done it more. After that, they got to be such a comfort to him, you know, when things went wrong; when the Ladies' Aiders got to fight—I mean, when they *didn't agree* about something," corrected Pollyanna hastily. "Why, it was those texts, too, father said, that made him think of the game—he began with *me* on the crutches—but he said 'twas the rejoicing texts that started him on it."

"And what game might that be?" asked the minister.

"About finding something in every thing to be glad about, you know. As I said, he began with me on the crutches." And once more Pollyanna told her story—this time to a man who listened with tender eyes and understanding ears.

A little later Pollyanna and the minister descended the hill, hand in hand. Pollyanna's face was radiant. Pollyanna loved to talk, and she had been talking now for some time: there seemed to be so many, many things about the game, her father, and the old home life that the minister wanted to know.

I talked about the book in our Wednesday

evening prayer-meeting, and at the close a lady came to me and said:

"Mr. Root, I am glad to know that you are of such a happy disposition."

"Oh! but I am not. Mrs. Root could probably tell you quite a different story. The reading of that book really startled me to think how many times, almost every day, something transpires that I am not *glad* about at all."

"*Eight hundred times.*" It keeps ringing in my ears. Shall everybody "be glad" *all the time*, no matter what happens? No, no! there are *conditions*. See Pollyanna's text at the head of this talk. It is only the "righteous" and "ye that are upright in heart." It is not enough that we "love God" and "our neighbor as ourself." After having done this we are to "be glad" and "shout for joy." I do sometimes (thank God) shout for joy, especially when I am working out among the "dasheen;" and I often feel like it when I don't shout; but, oh dear me! what a tremendous job the dear Savior has on his hands to *finish* the work of making me over so that I am really and "truly," as "Nancy" (bless *her* heart) might say, "born again" and fitted for *his* kingdom!

Years ago a physician and a church member came to me greatly excited because his reputation was being injured by what he called undeserved gossip. He declared he would go to the full extent of the law. As we were well acquainted I tried to persuade him to stick to business and let it drop. Finally I said, "Blessed are ye when men shall revile you and persecute you, and shall say all manner of evil against you falsely for my sake," but to my surprise it only made him angrier still.

"Mr. Root, is that *your doctrine?*"

I laughingly replied, "No, my good friend. It is not my 'doctrine;' but the doctrine of the Lord Jesus Christ."

A prominent business man, a doctor with quite a practice, and a professing Christian, was in *heathen darkness*, one might almost say, of the blessed promises in God's holy word. It was to him an "unexplored region."

Again, at one of our "teachers' meetings" that were always well attended by quite a number of old Bible scholars as well as an able pastor, I happened to say that *some-where* in the Bible we were told not only to "rejoice and be glad" when "lied about," etc., but we were admonished to "leap for joy." One of the company felt sure I was mistaken; and when I didn't find it right away the whole company turned on me, and even the minister "turned the laugh on me," because I insisted our Lord ever

uttered any thing so extravagant; but when I read to them Luke 6:22, 23, they made profuse apologies all around.

I mention these two incidents to show how the child Pollyanna was, in her simple faith, "head and shoulders" above the whole community, not excepting the poor, worried, and tried pastor of the church.

Once in a while we find a man (or woman), not *always* a professing Christian, who can look kind and pleasant when big quarrels are started. I know a few such. One man (who may see this) has many a time turned angry looks to smiles by his happy way of starting innocent jokes when trouble loomed up ahead. He is almost always "glad." A daily at my elbow tells of a policeman who, while looking into the barrel of a revolver in the hand of a man who declared he would never be arrested, talked kindly to the man, and finally induced him to surrender peaceably, when he would likely have killed several *more* of his townsmen otherwise.

A few weeks ago I asked you to pray for me that I might have grace to meet the boys that annoyed me a year ago. Well, for a time they seemed to have forgotten all about it until during the holidays, when there was no school. As I came out of the postoffice one day there was a yell I understood, and a crowd of boys were climbing all over my machine.

Asking the Savior to guide me I said, "Why, hello, boys! How many do you suppose this machine will pull? Climb in, all of you, and we will try." This, of course, was unexpected. By managing just right I succeeded in taking the whole load through the streets and up to the bank. It seemed risky leaving them with the machine; but I decided the good will of the town boys was of *more* value than a whole automobile, and went into the bank. I had to wait a little; and when, on looking out of the window, I saw them pulling and twisting every thing movable, my faith and courage began to fail. Just then the story in the Bible of how God told his people to stand still and see *him* fight the battle came into my mind. When I was ready to go, to my surprise the engine started promptly. At the grocery where I traded the proprietor said:

"Mr. Root, won't that gang of boys injure your machine?"

He seemed surprised when I didn't *seem* disturbed, and he then spoke again.

"Mr. Root, they are actually wheeling it away. Nobody knows where you will find it when you are ready to go."

I presume he thought it strange I didn't call the marshal; but as I saw it moving away I remembered a story of some mission-

aries who held a consultation as to whether they should *fight* the natives who were going to destroy the church, or trust to the power of prayer. What do you suppose happened? When I was ready to go I found my property intact, about ten feet from where I left it, and *not a boy in sight*. The old doctrine of "an eye for an eye and a tooth for a tooth" would have landed both boys and myself—where? The individual who *can* "rejoice and be glad" under all circumstances will not only be a power in his own community, but—listen to what the scripture says: "He that overcometh and keepeth my words unto the end, to him will I give power *over the nations*."

THE DIVINING-ROD, OR "WATER-WITCHING."

On page 662 I classed the above among the superstitions. Since that has been in print I am glad to see various periodicals taking it up. The *Scientific American*, in answer to an inquirer, indorsed my statement. The *Country Gentleman* informs us that Germany is making exhaustive investigations to see if it is a humbug. Their conclusion seems to be that these people who call themselves water-witches may have a sort of "intuition" that enables them to guess shrewdly where water is most likely to be found; and, of course, this queer thing which they call "intuition" would not work with their eyes blinded. In regard to the witch-hazel or peach-tree switch they agree that the water-witch must involuntarily make the thing swing around. This explanation, you will see, admits that the water-witch may be honest and sincere. The German people call the water-witch a "dowser." With this explanation let me quote from the *Country Gentleman*:

Our home-bred scientists have, in a way of speaking, doused the dowser with cold water. Replying to the German savants, the majority of a jury of American scientists have rendered this verdict: The divining-rod theory is all rot! "Yes, rot," asserts Professor Hering, who occupies the chair of physics at the New York University. "I don't think any competent scientist in this country has ever taken the divining-rod seriously or attempted to experiment with it. Although I have seen it tested several times I have never seen an attempt to locate water with it result in success." George C. Stone, of the American Institute of Mining Engineers, echoes this sentiment. Professor Peele, of the Columbia School of Mines, adds his contempt for the dowser, and tags him as a charlatan and faker. During the recent drouth Kansas tried the "water witch" along with the rainmakers. But he failed, or the water proved to be salty when he did find it.

I am glad to see the matter brought to the attention of men who stand away up in practical experience in matters that should fit them to become judges.

High-pressure Gardening

MORE ABOUT THE DASHEEN UP TO DATE.

When we reached here in November I asked Wesley about the last planting near a ditch where we had never been able to raise any thing, and he replied "Nothin' doin'," even with the dasheens, and said they grew only about a foot high. Some time later I investigated and found quite a crop, after all, of small tubers, very clean and solid, that had grown in almost pure white sand; and, sure enough, we got quite a big wheelbarrow load. When I was a boy (60 years ago) I was enthusiastic on "sorghum," and there was much difference of opinion in regard to the new syrup. Finally it transpired that cane on poor soil produced a much *better* syrup than that raised on rich mucky soil just right for big crops of corn. I wondered if it would not be so with the dasheen; and, sure enough, these dry tubers, almost as heavy as bullets, were the very nicest for baking. One more "discovery," and a very important one: When we first came I went out to where I planted the Government tubers a year ago, and with my knife I cut out the top of one of the largest corms, taking stalk and big leaves, and had it made into dasheen stew as I have described. Now, the big corm was left in the ground with the cluster of smaller plants all around it. I cut out so much of the corm that it left a saucer-like cavity that held rain water, and I supposed, of course, this would cause decay. Just about *two months later*, as it seemed to look all right, I took it in for dinner, and Mrs. Root called it the best baked dasheen we had tried. It had kept in the ground right where it grew, perfectly sweet and good, even when mutilated in the manner I have described.

This opens up another fact. In this frostless region dasheen may be left in the ground until wanted for the table, the year round; and, in fact, the very hills that I planted over a year ago are now bright and green, and growing finely. Of course they are greatly crowded, and the central corm has mostly dried down; but the others are still making a larger crop of small tubers. We are dividing these hills of a dozen or more plants, and making new plantations, without waiting to have the tubers die down.

Now, right in here comes something that has been only lightly touched upon. We have found a few of the *corms* that were dug and stored in November that had commenced to decay with what seemed to be "dry rot." But this was mostly when the roof of an outbuilding leaked, or when they were left in heaps before being dried out

thoroughly. When the smaller tubers have been dried in the sun, and then spread out on inch poultry-netting under shelter, they have so far kept perfectly. I wrote to the Brooksville Station about it, and below is Prof. Gomme's reply.

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
Foreign Seed and Plant Introduction
Plant Introduction Garden

Dear Mr. Root:—Your letter of Jan. 8 came to hand. We have experienced trouble in the keeping of the corms of the dasheens. The rot you speak of may be due to two things—viz., dry rot, or a fungus known as *sclerotum*. I am sending your letter to Mr. Young, in Washington, who will, no doubt, write you fully. He has charge of the dasheen project, and would rather, perhaps, give his views of the matter. This year all of our medium and seed tubers have kept well, but the corms as usual have decayed somewhat. I find that they will decay under any conditions, especially if stored damp. The corms especially evaporate while in storage. From our planting on the 3¼-acre tract, we obtained about 1093 bushels, which was not a bad yield.

I wish to thank you for sending me GLEANINGS. It is very interesting and instructive. Myself and wife both enjoy it.

Brooksville, Fla., Jan. 11. WM. GOMME.
Assistant Farm Superintendent.

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
Foreign Seed and Plant Introduction
DASHEEN CORMS—MORE ABOUT THEIR KEEPING QUALITIES.

Dear Mr. Root:—Mr. Gomme (of Brooksville, Fla.) has referred to me your letter of June 8 inquiring with regard to the keeping of dasheen corms. The corms of the dasheen do not keep as well as the tubers. This is, no doubt, partly because the corm is the first growth that takes place, and it would naturally be the first to yield to decay of any kind. While temperatures as low as between forty and forty-five degrees may lower the resistance of the corms we have no data to show to what extent this affects their keeping qualities. It is likely that they are affected by some definite disease, such as that known as Rolf's *sclerotum* or one or two others to which the dasheen is susceptible.

In our last circular on the dasheen, issued in May, 1913, we advised using the dasheen corms as soon as practicable after harvesting, because of their not keeping as well as the tubers. A copy of this circular is supposed to have been sent to you; but on the chance that you have not received it I am asking that another one be sent. I also enclose herewith a sheet of special directions for baking the corms, and general directions for cooking dasheens. If any other information is desired regarding dasheens I shall be very glad to answer as far as possible.

R. A. YOUNG, Scientific Assistant.
Washington, D. C., January 16.

Permit me to add to the above, that up to the present time (Jan. 19) the safest way to keep the corms here in Florida is to leave them right in the ground where they grew, until wanted for the table. I have been using them twice a day all winter, so far, and greatly prefer them, as a steady diet, to the best Irish potatoes. Here are the directions referred to:

DEPT. OF AGRICULTURE, WASHINGTON, D. C.

THE COOKING OF DASHEEN CORMS.

The dasheen is one of the new vegetables with which the Department of Agriculture is experimenting in the Southern States. It is the staple food of millions of people in tropical and subtropical countries. The plants themselves look something like the large-leaved ornamental caladiums or elephant-ears of the garden. Various parts of the plant are edible, but the principal food is furnished by the large, spherical corm, or "tuber," and a number of smaller tubers which are attached to it in the ground.

The dasheen corms can be prepared in many ways; but they are generally liked best when *par-boiled for about fifteen minutes*, and the cooking completed by baking in a *fairly quick oven*. Depending upon the size, they should be baked from one to two hours, a fork being used to test them. Corms weighing more than two pounds should generally be cut in half from top to base (lengthwise) beforehand, in order to reduce the time necessary for baking, and to prevent the chance of forming too thick a crust.

The appearance of the corms for serving is improved by scraping off the fibrous skin before boiling. If this is done and the corms are not baked so long as to make the crust thick and hard, it will be found to be of delicious flavor. If the corms are dipped in water during the scraping, as is usually done, a little baking soda should be added to the water; otherwise a slight irritation to the hands may be caused.

The interior of the cooked dasheen may be cream white, pearl gray, or some shade of violet. It is usually quite mealy, though sometimes, especially when first opened, it may be somewhat moist. The flavor is generally more or less nutty. The upper or bud end, after cooking, is sometimes rather moist, or a little fibrous, as compared with the middle and lower parts, and when so may be discarded.

As soon as done the corms should be cut open lengthwise, covered with a napkin, in a warm dish, and served *immediately*. If they have been cut open before cooking, the thin crust formed over the cut surface should at once be lifted, on taking from the oven. (This crust is itself very palatable.) The mealy interior can be taken out easily with a fork or spoon. Baked dasheens are generally drier than baked potatoes, and therefore need more butter. Salt is used in seasoning.

If impossible to serve immediately when done, the corm should be prepared for serving, as already described, or pricked several times with a fork to allow the steam to escape, and kept covered with a napkin, or other loose cover, in a warm place. If avoidable, however, there should not in any case be a delay of more than a few minutes in serving.

THE OBJECTIONABLE FEATURES IN REGARD TO GROWING ALFALFA.

I suppose there really are two sides to every thing. A periodical called *Better Farming* sums up the one objection to having a field of alfalfa. Here it is:

There is one objection to alfalfa: It was discovered by an Oklahoma farmer who uncovered his aching heart the other day in print, and told his tale of woe. He said: "We hear a good deal about the value of an alfalfa crop. Some people never let up blowing about it. They tell you if you feed it to your work team you won't have to feed grain to keep them fat; that it is worth pound for pound as much as bran for feeding milk cows; that it is one of the best pork-producers; that it is fine for feeding beef cattle. Give us a rest! It makes us tired! In May, just at the time you ought to be hoeing out your cotton, you have to go into your alfalfa field and cut the first crop. Then in June, just when you

have a chance to go fishing, there's another crop of alfalfa to cut, and you don't go. It's blazing hot in July, and you feel like you ought to shade some, but you have to get in another crop of alfalfa. In August you want to go to camp-meeting, swap yarns, have a good easy time, and imagine you have got religion. But you can't—there's that dog-goned alfalfa again. In September it has always been your custom to visit the wife's kinfolks, but do you do it? Not much. Confound that alfalfa! In October you are done with most other crops, and you want to go off to that gambling contraption known as the county fair, and spend some of your money, but you have to harvest another crop of that infernal alfalfa. And in November in desperation you turn the cattle in on the field, and they graze on it all fall. Are you through then? Heavens, no! You've got to spend all winter feeding it up."

Eye hath not seen, nor ear heard, neither have entered into the heart of man the things which God hath prepared for them that love him.—I. COR. 2:9.

FLYING TO BE MADE SAFER IN THE NEAR FUTURE.

I am sure the friends who have followed me in my reports in regard to the development of aviation by the Wright brothers will read with interest the following, clipped from the *Cleveland Plain Dealer*:

DAYTON, O., Jan. 5.—Orville Wright, premier aviator, to-day discussed the possibilities of his automatic stabilizer, which, he declares, will make flying "fool proof" and as comparatively safe as transportation by land. It means that an unskilled operator may make a trip from Dayton to New York and return with comparative safety. He said:

"We have invented an automatic stability device which will revolutionize flight," said Wright. "It is more accurate than any aviator can be, and will make flying fool proof, or as nearly fool proof as anything can be. I have flown many miles with it and have never touched the controls. We are now simplifying, and expect to be able to bring it to the point where it may be put in general use by early spring.

"We believe in making aerial work as safe as any on land," he said, "and we will continue to labor in that direction. We hope to see the day when it will be just as safe to board an aeroplane and take a long trip as it is at present to make this journey behind a locomotive.

"The stability device will go a long way toward making this dream a reality, and we are enthusiastic about it. Our device insures lateral as well as fore-and-aft stability. It depends in part on electricity, and we shall soon have the mechanism so perfected that it will not get out of order, and that means safety in flight.

"As may be generally known, many of the accidents in aviation have been due to what is called stalling. The aviator lets his speed sag below a certain point, the point necessary to secure sufficient wind pressure on the wings to sustain the machine, and it falls. Nothing can stop it.

"If he is traveling on an even keel when he reduces his speed below the danger-point, his machine will slide back, tail first, to the ground. Our device prevents the plane from rising too sharply; and if the speed falls below the danger-point it automatically directs the machine to the ground so that it will acquire speed enough to sustain it."

Discussing the future of the aeroplane, Wright said:

"The aeroplane will be used for commercial purposes, especially as a means of speedy transportation over vast distances. Over waste places and deserts

the aeroplane will be used; in fact, wherever water is not available.

"Mails will be thus carried, doubtless, over large stretches of territory in Texas, Utah, and New Mexico. Automatic stability is all that is needed to make it wholly practical, and I believe we have solved the problem."

Judging from a pretty close acquaintance with Orville Wright, I feel sure he would not express himself so hopefully were it not that he has some very good reasons for so doing. I wonder if they will not be coming down to Florida to test this great invention.

DASHEEN, FLYING-MACHINES, AND SOMETHING ABOUT GOD'S NEW AND WONDERFUL GIFTS TO US IN 1914.

Some of you will think, no doubt, my heading embraces a queer combination. Well, perhaps it does; but the idea was suggested by a picture Huber has just sent me of our Medina plant that is to come out in our new catalog. When I stirred the world up on bee culture years ago I had, as people thought, some extravagant day dreams of the outcome of the honey industry; but it is all coming to pass, and even *more* than I ever dreamed of. Later, when I visited the Wright brothers, and told what I had seen, the world laughed again; and I confess events *have* crawled along a little slower than I expected; but just listen to what has been going on almost "under my nose," and I didn't know it. About a week ago our good friend Mr. Gault (of "Gault raspberry" fame) wrote me as follows:

Dear Mr. Root:—As you are interested in airships I enclose a circular which you may care to look over. If you come over, call on me.

St. Petersburg, Fla., Jan. 6. W. C. GAULT.

Below is a copy of the circular.

ST. PETERSBURG TAMPA AIR-BOAT LINE; FAST PASSENGER AND EXPRESS SERVICE.

Schedule:—Leave St. Petersburg 10:00 A. M. Arrive Tampa 10:30 A. M. Leave Tampa 11:00 A. M. Arrive St. Petersburg 11:30 A. M. Leave St. Petersburg 2:00 P. M. Arrive Tampa 2:30 P. M. Leave Tampa 3:00 P. M. Arrive St. Petersburg 3:30 P. M.

Special-flight trips can be arranged through any of our agents or by communicating directly with the St. Petersburg Hangar. Trips covering any distance over all-water routes, and from the water's surface to several thousand feet high at passengers' request.

A minimum charge of \$15 per special flight.

Rates: \$5.00 per trip. Round trip \$10.00. Booking for passage in advance.

Note:—Passengers are allowed a weight of 200 pounds gross including hand baggage; excess charged at \$5.00 per 100 pounds; minimum charge 25 cents. Express rates, for packages, suit-cases, mail matter, etc., \$5.00 per hundred pounds; minimum charge, 25 cents. Express carried from hangar to hangar only; delivery and receipt by shipper.

Tickets on sale at hangars or city news stand, F. C. West, Prop., 271 Central Ave., St. Petersburg, Fla.

I confess at first I could hardly believe that an airship right here in Florida was carrying *passengers and express matter* on a schedule, and I wrote asking if it was

true, and if they really were making daily trips. In response I received a copy of the St. Petersburg daily for Jan 6, from which I clip as follows:

SWIFTER THAN ANY CRAFT IS THE AIR-BOAT; ST. PETERSBURG-TAMPA LINE AVERAGED TRIPS YESTERDAY IN 22 4-5 MINUTES.

Averaging twenty-two and four-fifths minutes per trip the St. Petersburg-Tampa Airboat Line is carrying out the schedules advertised, and is making time between this city and the terminal across the bay which few express trains could equal. Yesterday in the two trips to Tampa the time was, first trip, 24 minutes over and 22 back; second trip, 21 over and 24 back. This is time which is unequaled in the South by either passenger trains, automobiles, or any other passenger-carrying flying craft but the Benoist.

Tom W. Benoist, who is the head of the manufacturing company in St. Louis which makes the Benoist air-boats, is rushing his works to capacity in order to send several more machines here as soon as possible. Jannus and Fansler state that they are expecting to hear from him any day with the information that the machines have been placed in transit. With the arrival of the additional air-boats the service to Tampa will be greatly improved, and more passengers can be carried every day. With additional air-boats new trips may be arranged, and it is possible that Bradentown and Pass-a-Grille will be put on the list of ports of call. With a variety of trips which may be made by the air-boat more passengers will be carried, and the entire fleet of machines kept busy every day, is the belief.

That the inauguration of this, the first commercial line of flying craft in the world, St. Petersburg is becoming known in a way she was never before heard of, and by people who otherwise would likely never hear of this city.

Later.—After being in operation for two weeks, during which time the air-boat line has maintained its schedule without any serious mishap, the little air craft, after completing the flights made yesterday, had traveled 1002 miles. During the past week the air-boat has made its usual record in aeronautics, having completed the week by not only maintaining its regular schedule but having made the trips without any delay or engine trouble.

The air-boat will be pressed into service Sunday, Feb. 1, to bring Don C. McMullen, president of the State Anti-saloon League, who will deliver a lecture on that day in this city on the saloon question. Mr. McMullen is anxious to attend Sunday-school in Tampa in the morning of that day, and that will make it too late for him to catch the steamer and be in this city in time to make the lecture. Rather than take an automobile he made arrangements to come over by the air-boat.

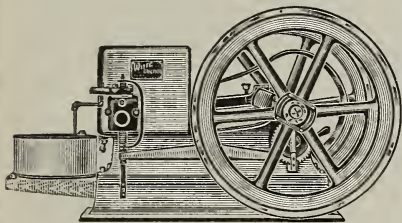
The air-boat has proven a decided success for commercial travel since the inauguration of the line in this city. The eyes of the aeronautical world are upon St. Petersburg, and the air-boat line and many of the prominent aviators of this and foreign countries are watching with interest the results of the air-boat line in this city.—*St. Petersburg Times*.

I find the daily flying machine between St. Petersburg and Tampa, Fla., mentioned above, is really a *hydroplane*. It starts in the water, *alights* in the water, and drops in the water again if any thing goes wrong, and in fact keeps only a few feet above the water on the whole trip of about 30 miles. Notwithstanding, passage is engaged a long way ahead. At present they carry only one passenger at a trip.

Now! Let me send you a WITTE Engine to earn its own cost while you pay for it.



DON'T break your back or waste time doing an engine's work. Iron and steel are cheaper than muscle; and kerosene oil, cheaper than time. I furnish the power of 10 men's work for 3½ an hour; 30 men's work for less than 80c a day, cost of engine included.



WITTE ENGINES

Kerosene, Gasoline and Gas

Made in sizes 1½, 2, 4, 6, 8, 11, 12, 15, 20, 25, 30 and 40 H-P. Stationary, Portable, Skidded and Saw-rig Styles. Standard the world over for all shop and farm power uses. Over 27 years ago I made my first engine and gave it my name, and ever since I have kept the active building of every WITTE engine in my own hands. I know every engine I ship, inside and out, and am making lower engine prices than this country has ever seen, while delivering engines that can't be beat.

60 DAYS FREE TRIAL

5-YEAR GUARANTY

Why take chances on a poor, or an unknown engine for any price when the WITTE is so cheap; when it is sold on any easy reasonable payments; and under a stronger money-back guarantee than any manufacturer has ever yet dared to sign?

SEND COUPON for MY BIG OFFER

Let me send you my Free Book, the finest in the whole engine business. Learn the cost of past high prices, and why I can undersell the whole field, and giving unmatched quality. Let me tell you by return mail how easily you can own a WITTE.

Ed. H. Witte, Witte Iron Works Co.

1932 Oakland Avenue, Kansas City, Mo.

Ed. H. Witte, Witte Iron Works Co.

1932 Oakland Avenue, Kansas City, Mo.

Without obligation on my part, send me, by return mail, Free, your New Book; and tell me how I can own a WITTE engine so it can earn its own cost while I am paying, for it.

Name

Address

Use KEROSENE Engine Free!

Amazing "DETROIT" Kerosene Engine shipped on 15 days' FREE Trial, proves kerosene cheapest, safest, most powerful fuel. If satisfied, pay lowest price ever given on reliable farm engine; if not, pay nothing. No waste, no evaporation, no explosion from coal oil.

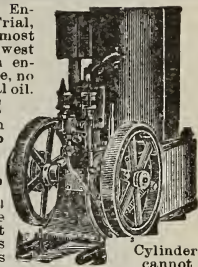
Gasoline GOING UP!

Gasoline is 9c to 15c higher than coal oil, and still going up. Two pints of coal oil do work of three pints gasoline.

AMAZING "DETROIT"

—only engine running on coal oil successfully; uses alcohol, gasoline and benzine, too. Starts without cranking. Only three moving parts — no cams — no sprockets — no gears — no valves — the utmost in simplicity, power and strength. Mounted on skids. All sizes, 2 to 20 h. p., in stock ready to ship. Engine tested before crating. Comes all ready to run. Pumps, saws, threshes, churns, separates milk, grinds feed, shells corn, runs home electric lighting plant. Prices (stripped) \$23.50 up. Sent any place on 15 days' Free Trial. Don't buy an engine till you investigate money-saving, power-saving "DETROIT," thousands in use. Costs only postal to find out. If you are first in your neighborhood to write, you get Special Extra-Low Introductory price. Write (138)

Detroit Engine Works, 373 Bellevue Ave., Detroit, Mich.

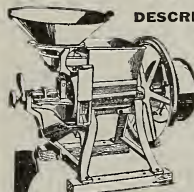


Cylinders cannot carbonize

Write for Catalogue

DESCRIBING, ILLUSTRATING and PRICING

Quaker City Mills



The acknowledged standard for high quality and variety of satisfactory usage for 47 years. 23 styles — hand power to 20 h. p. Will grind any grain, separate or mixed, coarse or fine meal, corn, cobs and husks. Sold on

10 Days' Trial — Freight Paid

Write for our grinding mill catalogue at once, also for booklet on labor-saving farm machinery at bargain prices.

THE A. W. STRAUB COMPANY

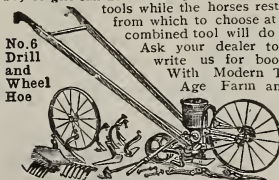
Dept. R, 3748-50 Filbert Street, Philadelphia, Pa.
Dept. G, 3703-11 So. Ashland Ave., Chicago, Ill.

A FARMER'S GARDEN

Helps his wife to plan her table in busy times. Saves work and worry, saves buying so much meat, gives better satisfaction to the help. A good garden will be almost impossible in your busy life without proper tools. They cost little and save much hard work.

IRON AGE WHEEL HOES AND DRILLS

will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant closer and work these hand tools while the horses rest. 38 combinations from which to choose at \$2.50 to \$12. One combined tool will do all of the work. Ask your dealer to show them and write us for booklet, "Gardening With Modern Tools" and "Iron Age Farm and Garden News" both free.



BATEMAN M'FG CO.
Box 1202
Gronoch, N. J.



CHEAPEST AT BOTH ENDS.

Costs least, lasts longest. Direct from factory for 60 days' trial with money-back guarantee. Our reputation is built into every rod of Mason Fence and Gates. Write today for our FREE CATALOG.

Mason Fence Co., Box 88, Leesburg, O.

1914 Chicken Money

Actual profits for wise poultry men and women should reach *tremendous figures*. Beef, pork, mutton shortage means extra heavy demands—*top prices*—for poultry and eggs. Will you get your share? Add chickens to your bee business—double your income. Make chicken-raising a *real business*—with *right* equipment.

CYPHERS INCUBATORS & BROODERS

are World's Standard equipment. Self-ventilating, self regulating. Insure best results—mean big, continuous hatches. Our

Big FREE Poultry Guide

is full of practical information and helpful advice—244 pages—500 illustrations. Write for your copy today. Also for facts about Cyphers Company's Free Bulletin and Personal-Letter Service which supplies continual, practical help in profitable poultry raising. Send name and address now to

Cyphers Incubator Co.
Dept. 69 Buffalo, N. Y.



RAYO Cuts Down Expenses —Does Away With Labor—and Makes \$179⁴⁰

"I am sending my order for another Rayo. The returns from my Rayo last year checked up over 500 chicks that lived to produce. Sold 45 cockerels from the lot from \$2 to \$3.50 each; most of the rest I marketed as broilers at 1 and 2 lbs., at an average of 30c per lb. Figuring it up, I find the Rayo made \$179.40 net for me. The machine took very little of my time, and I can recommend it to everybody who wants to make money in the business."—Roy Best, Waverly, Ohio.

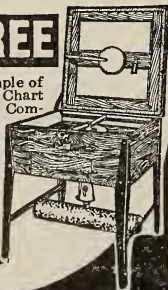
What the RAYO Has Done for Others—It Will Do for You

Get one and beat your neighbors' hatches and make more money. The Rayo boosts profits, slashes expense, cuts out the drudgery, over old-style, lamp-on-the-side machines. Requires only 1 filling to hatch. Runs on 1 gal. of oil; others use 5 gals. Runs with little attention; others need constant looking after. The Rayo does all its work automatically. Hundreds of experienced poultrymen will have no other machine. Beginners sure of success. Low, direct, freight prepaid prices to all.

All Three FREE

Money-Making Book and sample of first and only Patent Hatching Chart free to everybody on request. Complete chart and \$1.50 Hygrometer free to all new Rayo purchasers. Ask for Book No. 14. It tells how to Turn Eggs Into Chickens Into Dollars.

Rayo Incubator Co.
1069 S. 13th St.,
Omaha, Nebr.



Let the Chickens Make Your Living



H. H. Johnson

Bank the Other Profits

Let me send you the Old Trusty Book and show you how the chickens can help you make two incomes instead of one. This book gave the ideas to half a million others—why not to you?

Old Trusty

The People's Favorite

Three or four times more people buy the Old Trusty than any other make. It's because success is sure with the Old Trusty. We guarantee it to do its part or you trade back. Price still less than \$10 and freight prepaid east of Rockies. Only a trifle more delivered on Pacific Coast. Simple, easy to operate, no red tape instructions. First hatch pays you back its cost.

WRITE Get the book at once, whether you want to buy or not. It's free. Address—

JOHNSON, Incubator Man
Clay Center, Neb.



Highest Average Hatches
Every Month
in Every State.

My Belle City Now Eight Times World's Champion Hatcher



Write for
My Great
Book, "Hatching
Facts." A
Postal
Brings It

Two more World's Championships in 1913, make my Belle City the 8 Times World's Champion Hatcher. No other incubator in the world approaches this record. Yet it is the lowest priced. When you buy my Belle City

You Get Exact Duplicate of Prize Winning Incubators

276,000 in use. Get in the championship class. Start early.

Write Me Today. I've Got a Great Money Making Message for Every Poultry Man and Poultry Woman

A postal brings it. It illustrates the Belle City Incubator and Brooder in actual colors—shows what makes the Belle City the 8-Times World's Champion—gives facts about hatching success, bigger and better than you have ever heard of before. It is the story of thousands of users of my Belle City hatching outfit—told in their own words. Thousands not in contests get 100% perfect hatches. Just say—send me "Hatching Facts." My low price will come with it.

Write me personally,
Jim Rohan, Pres.

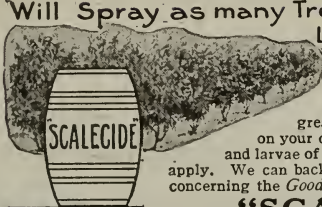
Belle City Incubator Co., Box 69, Racine, Wis.



Get My
Home Test
Offer
Freight Prepaid

One Barrel of "Scalecide"

Will Spray as many Trees as Three Barrels of Lime Sulfur



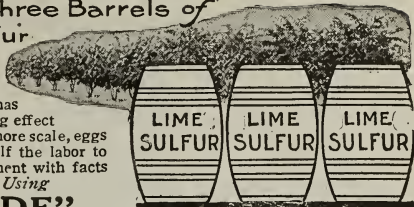
"Scalecide" has greater invigorating effect on your orchard—kills more scale, eggs and larvae of insects with half the labor to apply. We can back up this statement with facts concerning the *Good Results from Using*

"SCALECIDE"

Send for our illustrated booklet—"Proof of The Pudding". Tells how "Scalecide" will positively destroy San Jose and Cottony Maple Scale, Pear Psylla, Leaf Roller, etc., without injury to the trees. Write today for this FREE book and also our booklet—"Spraying Simplified".

Our **Service Department** can furnish everything you need for the orchard at prices which save you money. Tell us your needs.

We are World Distributors for **VRELAND'S "ELECTRO" SPRAY CHEMICALS** and **Arsenate of Lead Powder** (33 per cent), which, used wet or dry, has no equal in strength or texture. Avoid imitations. **B. G. PRATT CO., Mfg Chemists Dept. 6, 50 Church Street, New York City**



Write for Free Book on Spraying

300,000 use these wonderful sprayers to rid fields, fruit trees, gardens of blight, disease and insects—to make all produce big. Auto Spray No. 1—Capacity 4 Gallons. Auto Pop Nozzle throws from fine mist to drenching stream. Does not clog. 40 styles and sizes of Hand and Power Outlets. Large sprayers fitted with

Non-Clog Atomic Nozzle
only nozzle that will spray any solution for days without clogging. Fits any make of sprayer. Write for valuable **Spraying Guide Free**.
The E. C. Brown Co., 20 JAY ST., ROCHESTER, N. Y.

DOUBLE RESULTS

by saving half the solution and labor with the "Kant-Klog" Sprayer

Nine different sprays from same nozzle—round or flat—coarse or fine—starts and stops instantly. Ten different styles. Mail postal for special offer. Agents wanted.

Rochester Spray Pump Co., 207 Broadway, Rochester, N. Y.

RAIN OR SHINE

Stevenot's Weather Cottage forecasts weather changes 8 to 24 hours in advance. This little weather cottage is carefully made with thermometer, modeled stag-head and bird on front of building and birdhouse on roof.

The action is based on scientific principles, and is very accurate. In bad weather the man, with raised umbrella, comes out, and in fair weather the lady appears. Interesting to the entire family.

Every cottage fully guaranteed. Size 7 1/2 in. high. Sent parcel post prepaid in U. S. or Canada for \$1. Your money back if dissatisfied.

FRANK H. STEVENOT CO., Dept. 6, Cooper Union New York City.



Makes and burns its own gas and produces a pure white, steady, safe, 100 candle power light. No wick, smoke, dirt, grease or odor.

THE "BEST" LIGHT

Lighted instantly. Over 200 styles. Agents wanted. Write for catalog
THE BEST LIGHT CO., 306 E. 5th St., Canton, O.

FARM FENCE FROM FACTORY TO FARMER

Made of **OPEN HEARTH STEEL WIRE**. Proven by tests to be the most durable wire produced. Heavily galvanized with **PURE ZINC**. Sixty different styles and heights, each a satisfying-quality fence.

WE SELL DIRECT TO THE FARMER AT DEALER'S PRICES.

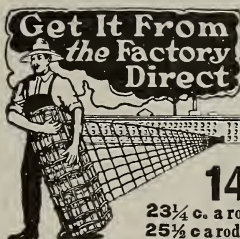
Be your own merchant and put the Dealer's Profit in your own pocket where it belongs. The following are a few of our big values:

26-inch Hog Fence, - - 14c. per rod.
41-inch Farm Fence, - - 21c. per rod.
48-inch Poultry Fence, - 22½c. per rod.
Special Barbed Wire, \$1.40 per 80-rod Spool.

Sold on 30 DAYS FREE TRIAL. Get in with the shrewd buyers by sending for our big free Catalogue. It's full of fence bargains. Write for it today.

COILED SPRING FENCE CO., Box 101 Winchester, Indiana

KITSELMAN FENCE



We make you the same price we would make the Dealer or Jobber. That is why we can save you money. Look at these very low prices.

14 CENTS A ROD for 26-in. hog fence

23¼ c. a rod for 49-in. farm fence

25½ c a rod for 60-in. poultry fence

\$1.40 for 80 rod spool of Ideal

Barbed Wire. Large free Catalog showing 100 styles of Farm, Poultry and Lawn Fence.

KITSELMAN BROS. Box 21 Muncie, Ind.

BROWN Direct from factory, freight prepaid. Over 150 styles for every purpose, all Double galvanized. 13c per rod up. New Bargain Catalog and Sample to test, ALL FREE. Mail postal NOW, to **THE BROWN FENCE & WIRE CO., Dept. 51 Cleveland, Ohio**

FENCE

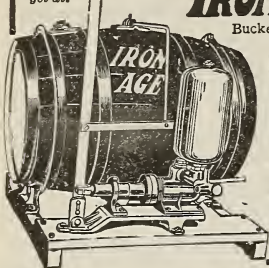
Burpee's Seeds

should like to make your acquaintance. Simply send us your address (a postal card will do) and you will receive **Burpee's Annual for 1914**—a bright book of 182 pages, which has long been recognized as "The Leading American Seed Catalog." Kindly **write to-day!** Address

W. ATLEE BURPEE & CO., Burpee Buildings, Philadelphia

SPRAYERS Are a Necessity and a Benefit.

Outside
Pumps.
Bronze
Ball
Valves.
Hemp
Packing.
Easy to
get at.



They save your crop, increase the yield and improve the quality. Our Spray Calendar shows when to spray and what materials to use. Our "Spray" booklet shows 70 combinations of

IRON AGE

Bucket, Barrel, Power and Traction Sprayers for orchard and field crops and other uses. Built complete or in units—buy just what you need. Ask your dealer to show them and let Uncle Sam bring you the rest of the story and the spray calendar. Also "Iron Age Farm and Garden News" free.

Bateman Mfg Co.
Box 1204
Grenloch, N. J.

Strawberries

(Summer and Fall Bearing) and All Small Fruit Plants



Strawberries and all Small Fruit Plants mean big and quick profits for you at a small outlay of money. We are headquarters for Summer and Fall Bearing Strawberry Plants, Raspberries, Blackberries, Gooseberries, Currants, Grapes, Fruit Trees, Roses, Ornamental Shrubs, Eggs for Hatching, Crates, Baskets, Seed Potatoes, etc. Best varieties, lowest price. 30 years' experience. Free catalogue is full of valuable information. Write today.

L. J. FARMER, Box 408, Pulaski, N. Y.



40 ACRES solid to Superb, Progressive, American and other best everbearers. Get acquainted offer for testing. Send us 10c for mailing expense, and we will send you 6 high quality everbearing plants (worth \$1) and guarantee them to fruit all summer and fall, or money refunded. Catalogue with history **FREE** if you write today.

THE GARDNER NURSERY CO.
Box 130 OSAGE, IOWA

BERRIES

AND SMALL FRUITS The proven productive varieties of berries, grapes, etc., are listed in my 1914 Catalog. Contains finest small fruits, vegetable roots, fruit trees, and decorative stock. Tells all about my unique **Money Saving Sales Plan**. It is free—write to day, Arthur J. Collins, Box 42, Moorestown, N. J.

Get today
our new
Sales Plan

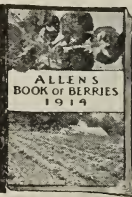


GROW BIG, LUSCIOUS STRAWBERRIES

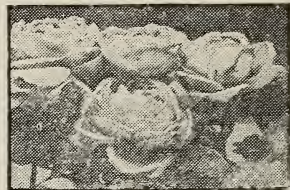
You can raise large crops of delicious berries from a small piece of ground if you start right—with hardy, prolific, carefully grown plants selected from **ALLEN'S TRUE-TO-NAME VARIETIES**

All standard early and late strains for every soil and climate requirement. **WRITE FOR 1914 BERRY BOOK.** Allen's Berry Book is full of valuable information on how to grow berries and small fruits profitably. It lists and describes Strawberries, Blackberries, Raspberries, Grapes, Currants, Asparagus, etc. Copy sent **FREE** upon request.

W. F. ALLEN, 57 Market St., SALISBURY, MD.



Roses, Plants, Seeds,



Bulbs, Vines, Shrubs, etc., by mail, postpaid. Safe arrival and satisfaction guaranteed. 60 years of fair dealing. Hundreds of carloads of **Fruit and Ornamental Trees**. 1200 acres, 60 in hardy roses—none better grown.

46 greenhouses of **Palms, Ferns, Begonias, Geraniums, etc.** Immense stock of **Superb Cannas**, the queen of bedding plants. Large assortment of hardy Perennial Plants, which last for years.

192-Page Catalog FREE. Send for it Today. The Storrs & Harrison Co., Box 240, Painesville, Ohio.

GOOD SEEDS

BEST IN THE WORLD
Prices Below All Others

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.

Big Catalog FREE

Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.

R. H. SHUMWAY, Rockford, Illinois



5000 bushel crop 1912 Tested and sure to grow. Finest quality. 20 leading varieties. Also Seed Oats, Barley, Grass Seed, Potatoes, etc. Samples on application. 100 acres. Be sure to get our new catalog. Write today. W. N. Scarff, Box 67, New Carlisle, O.

Sharpen Tools Quick



This wonderful tool grinder, with its rapid Dimo-Grit (artificial diamond) sharpening wheels, sharpens anything from a jack-knife to a plow point quickly and easily. No cooling by water or danger of drawing temper.

LUTHER GRINDER

DIMO-GRIT

Metal frame, enclosed shaft drive, dust-proof bearings, runs easy as sewing machine. 25 times faster than grindstone. 10 times better than emery. Special attachments: forge-milk test-rip saw-jig saw-lathe-drill-etc. Fully guaranteed. Send for free booklet on tool-grinding and details of free trial offer. **LUTHER GRINDER CO.**
829 South Water St., Milwaukee, Wis.

ELECTRIC Steel Wheel Handy Wagons Are Big Money SAVERS!



No more high lifting or pitch inc. Saves you work and lightens draft nearly 50%. Don't rut fields or roads. We also furnish Electric Steel Wheels to fit ANY wagon. Wheels can't dry out or rot. Send for free book of facts and proofs.

Electric Wheel Co.,
23 Elm Street,
Quincy, Ill.

PURE SWEET \$6.00 CLOVER 6 Per Bu.

BIGGEST MONEY-MAKER KNOWN—INVESTIGATE
The greatest forage plant that grows. Superior to all as a fertilizer. Equal to Alfalfa for hay. Excels for pasture. Builds up worn-out soil quickly and produces immense crops, worth from \$50 to \$125 per acre. Easy to get started, grows everywhere, on all kinds of soil. Don't delay writing for our Big 76-page free catalog and circular giving full particulars. We can save you money on best tested guaranteed seed. Sample Free. Write today.

A. A. BERRY SEED CO., Box 99A, CLARINDA, IOWA

MAKE HENS LAY

By feeding raw bone. Its egg-producing value is four times that of grain. Eggs more fertile, chicks more vigorous, broilers earlier, fowls heavier profits larger.

MANN'S LATEST Bone Cutter

Cuts all bone with adhering meat and gristle. Never clogs. 10 Days' Free Trial. No money in advance.

Send Today for Free Book.

F. W. Mann Co., Box 37, Milford, Mass.



RANGER BICYCLES

Have imported roller chains, sprockets and pedals; New Departure Coaster-Brakes and Hubs; Puncture Proof Tires; highest grade equipment and many advanced features possessed by no other wheels. Guaranteed 3 yrs. direct to you are less than others ask for cheap wheels. Other reliable models from \$12 up. A few good second-hand machines \$5 to \$8.

10 DAYS' FREE TRIAL

Shipment on approval, anywhere in U.S., without a cent in advance. **DO NOT BUY** a bicycle or a pair of tires from anyone at any price until you get our big new catalog and special prices and a marvelous new offer. A postal brings everything. Write it now. **TIRES, Coaster-Brake Rear Wheels, lamps, parts, sundries, half-normal prices.** Rider Agents everywhere are coinng money selling our bicycles, tires and sundries. Write today.

MEAD CYCLE CO., Dept. G-113, CHICAGO

YOUR HENS YOUR FARM YOUR MONEY

and Hens for Market or 30 Poultry Houses; tells cost to build; describes AMERICA'S LARGEST LINE of INCUBATORS and BROODERS—\$2.25 to \$48 each. Write today.

Robert Essex Incubator Co., 81 Henry St., Buffalo, N. Y.

Farmers and Fanciers

should get the **FREE POULTRY BOOK** and Catalogue written by **ROBERT ESSEX**, well known throughout America. After 25 Years with Poultry. It tells **How to Make Most From Eggs** Show, contains Pictures of 30 Poultry Houses; tells cost to build; describes AMERICA'S LARGEST LINE of INCUBATORS and BROODERS—\$2.25 to \$48 each. Write today.

CLOVER \$5.00 Per Bu. AND TIMOTHY

INVESTIGATE—Best and Cheapest Seeding Known. Alsike Clover and Timothy mixed. Fully 1-3 alsike, a big bargain. Greatest hay and pasture combination grown. Write for **Free Sample and 76-page catalog** and circulars describing this wonderful grass mixture. Beats anything you can sow and ridiculously cheap. We handle only best tested re-cleaned seed guaranteed. Write before advance.

A. A. BERRY SEED CO., Box 566, Clarinda, Iowa

Alsike - Clover - Seed

Small Red, Large Red, White, Yellow Sweet Clover; Alfalfa, Timothy, Blue Grass, Millet, Rape, etc. Good Seed Corn in varieties. Seed leaflet and apiary-supply catalog free.

F. A. SNELL, . . . Milledgeville, Illinois
Carroll County

850,000 GRAPE VINES

69 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine, cheap. 2 sample vines—10c. Descriptive price list free.

Lewis Roesch, Box K, Fredonia, N. Y.



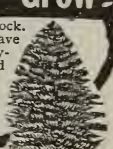
Strawberries

FREE BOOK

YIELD \$500 to \$1200 per acre under the Kellogg sure-crop method. Our beautifully illustrated 64-page book gives the complete Kellogg Way and tells all about the great Kellogg plant farms in Oregon, Idaho and Michigan.


R. M. KELLOGG CO.
Box 400, Three Rivers, Mich.

Hill's Evergreens Grow



Best for windbreaks. Protect crops and stock. Keep house and barn warmer—save fuel—save feed. Hill's evergreens are hardy, nursery-grown—low priced. Get Hill's free illustrated evergreen book and list of Great Bargain Offers—from \$4.50 up per Thousand. 56 years experience. World's largest growers. Write.


H. HILL NURSERY CO., Inc., Evergreen
246 Cedar St., Dundee, Ill. Specialists.



Latest Book "Profitable Poultry"

Finest published. 128 pages practical facts, 180 beautiful pictures. Tells how to breed, hatch, feed and market by latest improved methods. All about **Runner ducks** and 32 other pure-bred varieties. This 50 cent book and lowest price list of best fowls, eggs, incubators, supplies, etc., only 5 cents.

BERRY'S POULTRY FARM, Box 97, Clarinda, Iowa



56 BREEDS Chickens, Ducks, Geese and Turkeys.

Hardy, northern raised, pure bred, of finest plumage. Fowls, eggs and incubators at lowest prices. America's greatest poultry farm. Send for large, fine 19th Annual Catalog and Poultry Book.

R. F. NEUBERT CO., BOX 836, MANKATO, MINN.

ANNOUNCEMENT

**We announce the installing of complete
WEED - PROCESS FOUNDATION MA-
CHINERY in our new Ogden warehouse**

Resulting advantages to UTAH, IDAHO, COLORADO,
NEVADA, and MONTANA beekeepers:

SPECIAL PRICES and LOWER FREIGHT RATES on foundation.
HIGHER NET PRICE and QUICKER SETTLEMENT on beeswax shipments.
Get our prices for working your beeswax into foundation.

Remember we are headquarters for "ROOT" bee supplies and "American" honey-cans.
1914 cars now arriving. Write for prices. Honey and beeswax
accepted in payment for goods.

Superior Honey Co., Ogden, Utah
Superior Honey Co., Idaho Falls, Idaho

For special information address us at Ogden, Utah

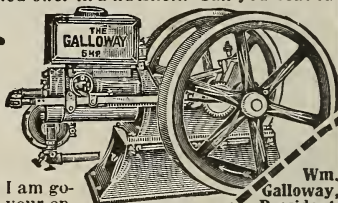
SAVE \$50 TO \$300

Buy Direct From the Actual Manufacturer.

Quit paying tribute to "Trusts" and "Combines." Stop paying a lot of unnecessary middlemen's profits. Buy direct at my wholesale factory prices and save \$50 to \$300.

Galloway Engines are made in our own modern factory. They are standard, high-quality, proven engines. Thousands in use. Made in sizes 1 1/4 to 15 H. P.—either stationary or mounted. Sold on 30 Days' Free Trial, backed by 5-Year Guarantee in "black and white" and \$25,000 Legal Bond. You take no risk whatever when you buy on my plan. Money back with freight paid both ways if not satisfied. That's my unequaled offer in a nutshell. Can you beat it?

**Write for
My Special
Offer**



Fill Out
Coupon

Wm.
Galloway,
President,
William Gallo-
way Company,
765 Galloway Sta.,
Waterloo, Iowa.

Do it today! When you write for my catalog I am going to make you a special offer. An offer that will help you to get your engine partly or entirely without cost to you in the end. No soliciting No canvassing. Just a straight "business proposition." Write.

FREE SERVICE BUREAU My big corps of engine experts will help you select and install without cost to you the best size and style engine for your work. No other manufacturer makes you as low prices, as liberal terms, as strong guarantees, or gives you as full protection. Try my plan, and let me prove it to you. Fill in, cut out and mail coupon, or write me a postal for my catalog and special offer. Do it now before you lay this paper down.

Name.....

P. O.....

State..... F. R. D.....

We also manufacture and sell direct cream separators, manure spreaders and other farm machinery.

Wm. Galloway, President

William Galloway Company, Waterloo, Iowa

765 Galloway Station

Classified Advertisements

Notices will be inserted in these classified columns at 25 cents per line. Advertisements intended for this department can not be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the Classified Columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

See our special sale of honey on advertising page 8 of this issue. THE A. I. ROOT CO., Medina, O.

Choice aster honey of very fine flavor in 60-lb. cans, two cans per case. H. C. LEE, Brooksville, Ky.

Bronzed honey labels, 1000 for 80 cts.; others, 60 cts. per 1000. PEARL CARD CO., Clintonville, Ct.

FOR SALE.—Choice extracted honey in new 60-lb. cans at 9 cts. per lb. J. P. MOORE, Morgan, Ky.

FOR SALE.—Finest quality clover and buckwheat honey in 60-lb. cans. C. J. BALDRIDGE, Homestead Farm, Kendaia, N. Y.

FOR SALE.—No. 1 white comb, \$3.50 per case; No. 2, \$3.20; 24 lbs. to case.

WILEY A. LATSHAW, Carlisle, Ind.

FOR SALE.—3000 lbs. of fine extracted honey in 60-lb. cans, 9 cts. per lb. GEORGE RAUCH, Orange Mountain Bee Farm, Guttenberg, N. J.

FOR SALE.—Aster, goldenrod, yellow-top honey-blends, fine quality, 5½ cts. per lb.

JOE C. WEAVER, Cochrane, Ala.

FOR SALE.—Several tons of raspberry-milkweed honey (mostly milkweed) in new 60-lb. cans (two in a case), a very fine honey. Write for price. Small sample free. P. W. SOWINSKI, Bellaire, Mich.

FOR SALE.—200 cases of No. 1 and fancy alfalfa and sweet-clover honey in light shipping cases, no glass. Will ship safe by freight. Corrugated pads between sections; \$2.75 per case. R. E. PIFFLEY, 415 Marquette Ave., Albuquerque, N. M.

FOR SALE.—White-clover honey, none better. In 10-lb. pails, six in a case, at \$6.50 per case; 5-lb. pails, 12 in a case, at \$7.00 per case; ½-lb. glass jars, 24 in a case, at \$2.80 per case. Sample, 4 cts. Also in 60-lb. cans, very nice amber honey.

HENRY STEWART, Prophetstown, Ill.

FOR SALE.—Blended raspberry, buckwheat, and goldenrod honey; has a thick body and a strong and very rich flavor. Put up for sale in new 60-lb. tin cans. Price \$5.00 a can. Sample by mail, 10 cts., which may be applied on an order for honey.

ELMER HUTCHINSON, Pioneer, Mich.

FOR SALE.—No. 1 white comb, \$3.25 per case; No. 2 white, \$2.75; No. 1 fall comb, \$2.75 per case; No. 2 fall, \$2.50 per case. All cases have 24 sections to case, and six cases to carrier. Amber extracted, 8 cts.

QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

HONEY AND WAX WANTED

WANTED.—Comb, extracted honey, and beeswax. R. A. BURNETT & Co., 173 So. Water St., Chicago.

WANTED.—Comb honey and beeswax. State what you have and price. J. E. HARRIS, Morristown, Tenn.

WANTED.—Honey, extracted and comb. Will buy or handle on commission. Beeswax—will pay highest price. HILDBRETH & SEGELKEN, New York, N. Y.

We pay highest market price for beeswax. Will also work your beeswax into "Weed Process" foundation for you at reasonable price. SUPERIOR HONEY CO., Ogden, Utah, and Idaho Falls, Idaho.

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Full line of Root's goods at factory prices. E. M. DUNKEL, Osceola Mills, Pa.

FOR SALE.—Comb-honey supers nailed and painted, cheap. Write H. HETTEL, Marine, Ill.

We now manufacture the famous "Weed Process" comb foundation. Special prices quoted on request. SUPERIOR HONEY CO., Ogden, Utah.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. CO., Greenville, Tex.

New crop of extra-fine quality alfalfa seed, \$7.00 per bushel; sacks, 25 cts. extra; also some sweet-clover seed. R. L. SNODGRASS, Augusta, Kan.

FOR SALE.—Empty second-hand cans, two cans to the case; good as new; 25 cts. per case.

C. H. W. WEBER & Co., Cincinnati, Ohio.

FOR SALE.—Better hive for less money. Beekeepers' supplies and standard-bred Italian bees. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

The best of bee goods for the least money. Send for new catalog. Satisfaction guaranteed or money refunded. H. S. DUBY & SON, St. Anne, Ill.

FOR SALE.—Root's goods and Dadant's foundation at factory prices.

SPENCER APIARIES CO., Nordhoff, Cal.

FOR SALE.—500 lbs. yellow biennial sweet-clover seed at \$14.00 per bushel of 60 lbs., hulled seed.

R. L. SNODGRASS, Harrisburg, Col.

FOR SALE.—Root's goods at factory prices. Fresh stock and prompt accurate service. Let's get acquainted. L. W. CROVATT, Box 134, Savannah, Ga.

FOR SALE.—2½ H. P. Thos. motorcycle in good order. I will take bees and supplies in part or full payment. C. A. GAINES, Versailles, Ky.

1914 cars Root's Bee Supplies and American honey-cans now arriving. For quick shipments order from SUPERIOR HONEY CO., Ogden, Utah, and Idaho Falls, Idaho.

FOR SALE.—Barnes foot-power saw, \$15.00; 25 eight-frame bodies in flat, \$6.00; 25 covers for same, nailed and painted, \$5.00; 25 bottom-boards, nailed and painted, \$5.00; 25 improved covers, ten-frame, in flat, \$6.00; 10 Alley drone and queen-traps, \$2.00. First check of \$35 takes the lot. ALPLAUS BEE AND POULTRY FARM, Schenectady, N. Y.

The Beekeepers' Review Clubbing List: *The Review* and *Gleanings* one year, \$1.50. *The Review* and *American Bee Journal* one year, \$1.50. All three for one year only \$2.00. Dealers or those wanting to buy honey kindly ask for a late number of the *Review* having a list of 100 producers having honey for sale. Address

THE BEEKEEPERS' REVIEW, Northstar, Mich.

REAL ESTATE

Fertile Virginia Farms, small and large, on railroad, \$15 an acre up. Easy payments. Write for list. Send names of two friends interested in Virginia, and receive our beautiful magazine one year free. F. H. LABAUME, Agr'l. Rgt. Norfolk & Western Ry., Room 246, N. & W. Bldg., Roanoke, Va.

Men of ambition prosper in the Southeast. Small capital with energy will accomplish wonderful results. Dairy, stock fruit, or poultry will make you independent. Land sells from \$15 an acre up. Growing season from 7 to 10 months' duration. Modern schools, good highways and churches. "The Southern Field" magazine and farm lists on request. M. V. RICHARDS, Land and Industrial Agent, Room 27, Southern Railway, Washington, D. C.

WANTS AND EXCHANGES

WANTED.—100 colonies of bees.
B. J. HOLDEN, Dorset, Ohio.

I pay cash for used beehives. Any quantity.
JAMES RENWICK, Leroy, Ind.

WANTED.—Southern queens. 200 for May delivery.
F. B. CAVANAGH, Hebron, Ind.

WANTED.—250 colonies of bees, from a location free from disease. Box 3770, GLEANINGS, Medina, O.

Will buy bees. Myself examine, pack, and ship. Write F. A. ALLEN, Phillipsburg, Que.

WANTED.—10-inch foundation mill. Must be in good condition and a bargain.
GEORGE SLOANE, Buckholts, Texas.

WANTED.—Bees in lots of 25 to 300 colonies, preferably within 250 miles of Detroit, Mich.
A. W. SMITH, Birmingham, Mich.

WANTED.—Used ten-frame hives or supers with combs. No diseased combs. G. S. WARNER, Rt. 3, Box 25, Santa Ana, Cal.

WANTED.—To exchange "Root" bee supplies and "American" honey-cans for honey in five-gallon cans or for beeswax. SUPERIOR HONEY Co., Ogden, Utah, and Idaho Falls, Idaho.

WANTED.—50 to 100 colonies of bees and extracting-supers in the vicinity of New York State or Ontario, Can. State price and kind in first letter.
57298 H, 98, care of GLEANINGS, Medina, Ohio.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1914. Our catalog and price list will be mailed to you free. Order early and get the discounts.

C. E. SHRIVER, Boise, Idaho.

BEES AND QUEENS

FOR SALE.—50 to 200 colonies, eight-frame, first-class.
E. F. ATWATER, Meridian, Idaho.

Am booking orders now for three-band Italian queens.
J. I. BANKS, Liberty, Tenn.

Pure Italian bees or their hybrids, in L. 10 frames, wired, full foundation, 1 or 100.
JOS. WALRATH, Antioch, Cal.

FOR SALE.—150 colonies or carload of Italian bees in ten-frame Langstroth hives, in Missouri. Address R. F. HOLTERMAN, Brantford, Ont., Can.

Golden-yellow Italian queens my specialty. Untested, \$1.00; tested, \$1.50. Ready April 1. Safe arrival guaranteed. E. A. SIMMONS, Greenville, Ala.

FOR SALE.—Ten eight and ten frame hives of Italian bees cheap.
EUGENE LUTTRINGER, 249 Market St., Paterson, N. J.

California Golden queens produce the bright workers, equal to any. Tested, \$1.25 to \$2.50; mated, 75 cts.; 12, \$8.00; 50, \$32; 100, \$60.
W. A. BARSTOW & Co., San Jose, Cal.

1914 queens. Moore's strain of leather-colored Italians in April at 75 cts. Write us for prices on nuclei. Address
OGDEN BEE AND HONEY Co., Ogden, Utah.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1.00; 6 for \$5.00. WM. S. BARNETT, Barnett's, Va.

FOR SALE.—75 colonies Italian bees in ten-frame dovetailed hives, first-class condition; warranted free from disease; \$6.50 per colony.

N. P. ANDERSON, Eden Prairie, Minn.

Italian bees in pound packages and on comb our specialty; 30-page catalog giving beginners' outfit free; also queens.
THE DERBY TAYLOR Co., Lyons, N. Y.

FOR SALE.—Italian queens, bees by pound. Descriptive list free. Apiaries under State inspection. Leaflets, "How to Introduce Queens," 15 cts.; "How to Increase," 15 cts.; both 25 cts.
E. E. MOTT, Glenwood, Mich.

Golden Italian queens that produce golden bees, the brightest kind, gentle, and as good honey-gatherers as can be found. Each: \$1.00; six, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.
J. B. BROCKWELL, Malvern Hill, Va.

Phelps' Golden combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; tested, \$2.00 and \$3.00; breeders, \$5.00 and \$10.00.
C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

FOR SALE.—Several yards of bees on five years' time and easy terms of payment. No disease, and best of locations. All we ask is that you help us work these bees for several months this year to show your ability to manage them. Further particulars on request. SPENCER APIARIES Co., Nordhoff, Cal.

Queens bred from Moore's and Doolittle's best Italian stock; untested, 60 cts. each; \$6.60 per doz.; \$50.00 per 100. Tested, 90 cts. each, \$10.20 per doz.; \$80.00 per 100. Delivery guaranteed. Book orders now. Nuclei, any quantity, two-frame, \$1.50; three-frame, \$2.00. Add price of above queens wanted.
SPENCER APIARIES, Nordhoff, Cal.

Goldens and three-band Italians, ready March 1. They have been bred for three points—prolificness, gentleness, and honey-gathering qualities. Select untested, each, 75 cts.; 6, \$4.25; 12, \$8.25; 50, \$32.50; 100, \$60.00. Tested, \$1.50; select tested, \$2.00; three-banded breeders, \$4.00; golden breeders, \$5.00.
GARDEN CITY APIARY Co., Rt. 3, Box 86, San Jose, Cal.

FOR SALE.—Three-banded Italian queens, nuclei, and bees by the pound. March 15 to June 15, untested queens, each, 75 cts.; 6, \$4.25; 12, \$8.25; tested, each, \$1.25; 6, \$7.25; 12, \$14.00. Bees by pound: 1-lb. package, \$1.25; 6, \$7.25; 12, \$14.00. If you wish a queen with bees by the pound add price of queen. Write for circular and complete price list.
BROWN & BERRY, Hayneville, Ala.

FOR SALE.—California Italian queens, Goldens and Three-banders by return mail after March 15; select untested, 75 cts.; 12, \$8.00; tested, \$1.00; breeders, \$3.00. Bees by the pound a specialty, ready April 1; 1 lb., \$1.25; 2 lbs., \$2.25; large lots, less. Booking orders now. Deliveries and satisfaction guaranteed. Correspondence solicited. Circular free.
J. E. WING, 155 Schiele Ave., San Jose, Cal.

GOOD QUEENS.—Good queens are a real necessity in any apiary if best results are to be expected. The old leather-colored three-band Italians have proven themselves to be the best general-purpose bees extant. These I can supply in any quantity you may wish. Untested, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Safe arrival and satisfaction. All orders will have prompt attention.
E. J. ATCHLEY, Bloomington, Cal.

FOR SALE.—Early swarms at fall prices; ½-lb. bees, \$1.00; 1 lb. bees, \$1.50. Add price of queen if wanted. Untested three-band Italian queens, 75 cts. each; tested Italian queens, \$1.25 each. These are bred from best honey-gathering strain. No disease. Safe arrival and satisfaction guaranteed. This is undoubtedly the best way for Northern honey-producers to increase and improve their stock. Delivery begins about April 5. Capacity, 40 swarms per day.
W. D. ACHORD, Fitzpatrick, Ala.

I will sell and ship some bees from my 400 colonies from northern Louisiana in April and May. Two-comb nuclei, \$2.00; 3-comb, \$2.50. One pound bees in Root cages, \$1.50; two pounds, \$2.50. Queens with bees, 75 cts. extra; young untested, or last season's tested, ordered separate, \$1.00 each.
H. C. AHLERS, West Bend, Wis.

EARLY QUEENS.—Those who desire early queens can be supplied by sending orders to us. Only three-band Italians stand the severe test against diseases, and our bees are clean. Untested queens, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Always safe arrival and satisfaction to everybody. If you desire queens in large lots early, better let us book you as soon as convenient, and money can be sent when queens are wanted. Your check is good, or any way you wish to remit.

THE RIALTO HONEY CO., Box 73, Rialto, Cal.

Many men of many minds; but the minds of practical beekeepers are turned toward the old reliable three-band Italians. We have them in their purity, new blood, new importation. Untested queens from March to June, \$1.00 each; \$4.25 for six, or \$8.00 per dozen; safe arrival and satisfaction to all customers. Write for prices on large quantities. You do not have to return dead queens to us—just state it so on a postal card, and queens dead on arrival will be replaced promptly.

THE GOLDEN RULE BEE CO., Riverside, Cal.

POULTRY

Rhode Island Reds. Strong baby chicks for sale. Write me.
E. O. WALTZ, Medina, Ohio.

Eggs for hatching, S. C. White Orpingtons. Mating list free. JAMES R. LAMPSON, box B, Medina, O.

Eggs for sale. Rhode Island Reds and Barred Rocks, \$1.00 per 15.
H. J. RODENBERG, Rt. 4, Metropolis, Ill.

Stock and eggs for sale, all leading varieties; also geese and Belgian hares. Catalog free.
LEVI STUMB, Richland Center, Pa.

Pure-bred Indian Runner ducks, snow-white eggs, 15 for \$1.00; 100 for \$6.00. J. C. WHEELER,
921 Austin Boul., Oak Park, Ill.

Silver Campines are money-makers. I offer first-class stock, \$10; \$12 per trio.
ELMER W. PALMER, Catskill, N. Y.

Pure white and fawn and white Indian Runners, Pekins. Catalog free. White-egg strains.
THE DERBY TAYLOR CO., Lyons, N. Y.

LEGHORNS.—Eggs for hatching. S. C. W. Leghorns, \$5.00 per 100; \$1.00 per 15. Send for catalog.
WOODWORTH FARM, Wilton, Ct.

EGGS.—20 for \$1.00; leading varieties prize poultry, pigeons, hares, etc. Booklet free. Large illustrated catalog, 10 cts. F. G. WILE, Telford, Pa.

Corning strain S. C. White Leghorn eggs and day-old chicks for sale. Also a few lusty cockerels. This strain lays, weighs, and pays.
F. J. ARMSTRONG, Nevada, Ohio.

S. C. White Leghorn, 15 eggs, \$1.25. Day-old chicks, 15 cts. each. Buff Wyandott, utility-stock eggs, per setting of 15, \$2.00. Day-old chicks, 20 cts. each.
JOHN RIEDER, Medina, Ohio.

Rhode Island Reds, Partridge Wyandottes, Mottled Anconas, White Leghorns, White Cornish; Pekin, Rouen, Fawn and White Indian Runner ducks; also pure-white Indian Runners and White Call ducks. Line-bred stock for sale. Eggs to set. Prices reasonable for high-class stock.
L. G. CARY, Timble, Ohio.

MISCELLANEOUS

Choice maple syrup direct from producer.
C. C. PARKHURST, Rt. 1, Phalanx Station, Ohio.

Belgian hares, breeders, and youngsters. List free.
HARVEY L. STUMB, Quakertown, Pa.

Pigeons! Pigeons! Thousands, all breeds; lowest prices; satisfied customers everywhere. Start with our \$\$\$-making Jumbo Squab-breeders. Large, free, instructive, illustrated matter.

PROVIDENCE SQUAB CO., Providence, R. I.

HELP WANTED

WANTED.—Strong, experienced help in apiary. Please give full particulars in first letter.
W. D. WRIGHT, Altamont, N. Y.

WANTED.—Reliable man of good habits to work with bees and on small farm for season of 1914. Give age, experience, and wages.
FRANK KITTINGER, Caledonia, Wis.

WANTED.—A good young man for the season of 1914 to work with bees. State salary, experience, age, etc., in first letter.
FRANK C. ALEXANDER, Delanson, N. Y.

WANTED.—Another young man of good habits, who is interested, to work with bees and on farm for coming season. Have nearly 1000 colonies.
N. L. STEVENS, Venice Center, N. Y.

WANTED.—Man (married preferred) experienced in queen-raising; employment by the year on a salary and percentage.
OGDEN BEE AND HONEY CO., Ogden, Utah.

WANTED.—Steady single man to work on six-acre fruit-farm, and help with 300 colonies of bees. State age, experience, and wages expected in first letter, with references. D. L. WOODWARD, Clarksville, N. Y.

WANTED.—A young man of good character to work in our honey-producing yards and queen-rearing department. Please state experience and wages expected in first letter. We furnish board.
BROWN & BERRY, Hayneville, Ala.

I could take two or three young men of good clean habits to learn beekeeping during the season of 1914; crop last year, 80,000 lbs. Board free, and something more if we both do well.
R. F. HOLTERMANN, Brantford, Ont., Canada.

WANTED.—Single young man with some experience for season of 1914, beginning about the middle of May; must be strictly temperate, industrious, and willing to work hard in the busy season. State age, experience, and wages expected, with board supplied, in first letter. Give references.

EWART McEVoy, Woodburn, Ontario, Can.

Exceptional opportunity.—Shares or share and salary, with prospect of future interest, to right man; operating 150 to 300 hives of bees in a location where both clover and heavy autumn flows are secured by using motor truck. Sure fall location. State your qualifications and experience in first letter.
F. B. CAVANAGH, Hebron, Ind.

SITUATION WANTED

WANTED.—Work in the bee business. I am a thoroughly experienced beekeeper, having worked with bees for 12 years; produced comb and extracted honey; familiar with disease and queen-rearing; also with the use of autos and trucks. I am 28 years old and single; no bad habits. References furnished. State wages in first letter. E. A. KNEMEYER,
218 E. Mt. Ave., Fort Collins, Col.

BEEKEEPERS' DIRECTORY

If you need queens by return mail send to J. W. K. SHAW & Co., Loreauville, Iberia Parish, La.

Nutmeg Italian queens, leather color, after June 1, \$1.00. A. W. YATES, Hartford, Ct.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York.

QUEENS.—Improved red-clover Italians bred for business. June 1 to Nov. 15, untested queens, 75c. each; dozen, \$8.00; select, \$1.00 each; dozen, \$10; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

Quirin's famous improved Italian queens, nuclei, colonies, and bees by the pound, ready in May. Our stock is northern-bred and hardy; five yards wintered on summer stands in 1908 and 1909 without a single loss. For prices, send for circular.

QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio.

SPECIAL NOTICES

BY OUR BUSINESS MANAGER

The supply of J. E. Hand's book, "Hand's System of Swarm Control," or "Beekeeping by Twentieth Century Methods," is entirely exhausted. It has been decided not to publish another edition.

ALSIKE-CLOVER SEED.

We are supplied with good alsike-clover seed which we offer at 25 cts. per lb.; \$3.50 per peck; \$6.50 for half bushel; \$12.25 per bushel; 2 bushels, \$24.00, bags included, and shipping charges extra.

MAMMOTH OR PEAVINE CLOVER.

We have for sale a choice lot of mammoth or peavine clover seed, which we offer at 22 cts. per lb.; \$3.00 per peck; \$5.50 per half bushel; \$10.50 per bushel; \$20.00 for 2 bushels, bags included.

SWEET-CLOVER SEED.

The lot of mixed white and yellow unhulled seed offered in late issues has all been sold. We have a good supply of unhulled yellow biennial in stock here, at Chicago, and Des Moines; have a good prospect of replenishing our stock of hulled yellow biennial from a grower in Nebraska. We are temporarily sold out of white unhulled, and have a small stock of the hulled. We have more of both engaged, some of it on the way here, and will try to take prompt care of orders we may receive at prices last published in last issue.

BEESWAX.

Since our last issue went to press we have secured a more liberal supply of beeswax; and if it continues to come in good volume at no higher price we shall be able to continue present prices on comb foundation, although the margin is very close. Should the price of wax go higher we will be compelled to advance the price of foundation.

We are paying at present 32 cts. cash, 34 in trade, for average wax delivered here, and a premium for extra choice quality. Rates for making up wax into foundation quoted on application.

"ANSWERS TO 150 QUESTIONS COMMONLY ASKED ON BEES"

is the title of a new booklet in the press of The A. I. Root Co. The preliminary announcement of it in our general catalog has made an enormous demand for it already; but we have decided to send it to all subscribers who send in \$1.00 before their subscriptions expire, free. The booklet contains 71 pages, and is packed full of useful information. It has an elaborate index so that one can locate just the precise information he is seeking. These answers are taken largely from letters from our subscribers, and cover a very wide field. Some of the information given is not comprised in our text-books. The book will be ready to send out by March 1st.

SECOND-HAND FOUNDATION MILLS.

We have to offer the following list of foundation machines which have been used, but are in fair condition. In many cases they will answer as well as a new machine where you have only a moderate output. Send for samples of any mill in the list which may interest you.

No. 0139, 2½ x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.

No. 0140, 2½ x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.

No. 0142, 2½ x 6 hexagonal thin-super mill, in fair shape. Price \$10.00.

No. 0153, 2½ x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.

No. 0154, 2½ x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.

No. 0156, 2½ x 6 extra-thin-super mill, fair. Price \$10.00.

No. 0165, 2½ x 6 hexagonal extra-thin-super mill in fair condition. Price \$12.00.

No. 0176, 2½ x 6 extra-thin-super mill in fair condition. Price \$12.00.

No. 0180, 2½ x 6 hexagonal thin-super mill, in fair condition. Price \$10.00.

No. 0183, 2½ x 6 hexagonal thin-super mill, very good condition. Price \$14.00.

No. 0188, 2 x 10 round-cell medium-brood mill, in good condition. Price \$14.00.

No. 0182, 2½ x 12 round-cell medium-brood mill in very good condition. Price \$20.00.

No. 0207, 2½ x 6 hexagonal cell thin-super Dunham mill in good condition. Price \$10.00.

No. 0210, 2 x 10 round-cell medium brood mill in extra-good condition. Price \$16.00.

SPECIAL NOTICES

A. I. ROOT

THE FLORIDA (WEEKLY) GROWER.

There are several reasons why I look over the above with special interest. First, it treats of conditions near our Florida home. The editor also has footnotes to many of the articles, adding much to their value, and he tells the *truth* to those in the North who want to come here. Last, but not least, he is generally well posted as to what can be and what cannot be grown successfully in this region. The paper is \$1.50 per year—306½ Cass St., Tampa, Florida.

"HOW TO KEEP WELL AND LIVE LONG."

I have for the first time gotten hold of a 48-page pamphlet (sent out by the *Practical Farmer* people), containing testimonials from people who have gained health by reading Terry's book with the above title. The pamphlet is one of my "happy surprises." It is itself an exceedingly valuable little book, and yet, as I take it, it is given away as an advertisement of the *Farmer* and Terry's book. By all means send for it if you haven't it already. This pamphlet *alone* will prove, I am sure, a great boon to a suffering world. Address The *Farmer* Co., 18th and Market Sts., Philadelphia, Pa.

A QUEEN-BEE FROM THE KING OF ITALY.

A. H. Fralick (Homer, Minn.) and wife have just paid us a brief visit. Friend F. is not only an extensive beekeeper, but claims to have a queen sent to a neighbor of his by the *king of Italy*. If the king has really taken to beekeeping, may he not see fit to help us in preserving and getting hold of the best strains of Italian bees? Are there any better bees on the face of the earth than the Italians? I replied that, so far as I knew, the A. I. Root Co. gave the best strains of Italian bees the preference. Friend F. has just purchased property in our immediate neighborhood.

Convention Notices

The Northern Michigan branch of the National Beekeepers' Association meets at Petoskey, Tuesday and Wednesday, March 10, 11. A good program will be prepared, and premiums offered for display of

comb and extracted honey and wax. The session will be held at City Hall; headquarters at Cushman House. IRA D. BARTLETT, Sec.

East Jordan, Mich., Feb. 5.

Feb. 23, the last Monday in this month, we shall introduce a new feature in our association—namely, a banquet after the meeting, to all present. Toasts and speeches will rule. We concluded to give two banquets each year—one in February and one in August, election of officers. We are considering a fine coat-lapel button, blue background with golden queen in center, gold rim, and inscription in gold letters, "We Sweeten Others" around the queen. Sweet-clover seed is also to be distributed among the members.

Cincinnati, O., Feb. 2. HENRY REDDERT, Sec.

Program of the tenth annual convention of the Pennsylvania State Beekeepers' Association, to be held in the capitol building, Harrisburg, Feb. 20 and 21.

FRIDAY, 2 P. M.

Roll-call. Reading of minutes. Report of Secretary H. C. Klinger, Liverpool, Pa. "Comb and Extracted Honey in the Same Apiary," H. P. Faucett, Brandywine Summit. "Economic Increase," Harold Hornor, Philadelphia, and F. G. Fox, Pipersville. Discussion. Business.

7:30 P. M.

Address of welcome, Hon. N. B. Critchfield, Secretary of Agriculture. "Discouragement," Rev. C. Fassold, Williamstown. "Experiences of an Inspector," Geo. H. Rea, Reynoldsville. President's Annual Address, Dr. H. A. Surface, Economic Zoologist.

SATURDAY, 9 A. M.

Reports of the inspectors. Election of officers. "The Coons Hive and Honey Production," R. L. Coons, Coudersport. "Two Essentials in Honey Production," Dr. E. F. Phillips, Washington, D. C. "Stung," Hon. E. A. Weimer, Lebanon. Discussion. 1:30 P. M.

Business. "Queen-rearing for the Beginner," Isaac F. Tillinghast, Factoryville. "House Apiaries," F. J. Strittmatter, Ebensberg. "Treating Foul Brood in the Fall," J. O. Buseman, Philadelphia. "Soil, Fertility, and the Production of Honey," Dr. H. A. Surface.

Everybody welcome. Bring your neighbor along. Beekeepers and dealers are requested to make displays of honey and supplies.

H. C. KLINGER, Sec.

The annual meeting of the Southeastern Minnesota and Western Wisconsin Beekeepers' Association will be held in the Court-house, Winona, Minn., on Tuesday and Wednesday, February 24-25, 1914.

TUESDAY.

10 A. M. Social hour. Reading minutes. Reports of Secretary and Treasurer. Report of the State Bee Inspector, J. Alf. Holmberg, St. Paul.

1:30 P. M. "Why My Bees Produced 4000 lbs. of Honey in 1913," L. A. Stickney, Minnesota City. "Wintering Bees," Wm. Dotterwich, Winona, Minn. Address, Prof. Francis Jager, State University, Minn. "Honey-producing Plants of Minnesota," Prof. Holzinger, State Normal School, Winona.

WEDNESDAY.

9 A. M. President's address, W. K. Bates, Stockton. Report on State Beekeepers' Meeting, L. A. Stickney, Minnesota City. "Difficulties Found the Past Year," W. G. Schultz, Elgin. Paper, E. C. Cornwell, Minnesota City. Discussions on the above topics.

1:30 P. M. "What I Think of a State Honey Exchange, Fred Oech, Wilson, Minn. "Some Experiences with foul Brood," F. L. Clow, Dresbach, Minn. Question-box. Business session. Annual picnic. Election of officers, etc.

All beekeepers and those interested in bees are invited to attend the meetings and take part in the discussions whether members of the association or not.

For twenty-five cents you become a member of this association. If you can not attend the meeting, send twenty-five cents to the Secretary and you will receive receipt for the same. If convenient bring with you a small sample of extracted or comb honey or a useful tool or fixture used about your apiary.

Winona, Minn.

OZRO S. HOLLAND, Sec.

This Washer Must Pay for Itself

A MAN tried to sell me a horse once. He said it was a fine horse, and had nothing the matter with it. I wanted a fine horse. But I didn't know any thing about horses much. And I didn't know the man very well either.

So I told him I wanted to try the horse for a month. He said "All right, but pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse wasn't "all right," and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse although I wanted it badly. Now this set me thinking.

You see I make Washing Machines—the "1900 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about

the horse, and about the man who owed it.

But I'd never know, because they wouldn't write and tell me. You see I sell my Washing Machines by mail. I have sold over half a million that way.

So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tubful of very dirty clothes in Six Minutes. I know no other machine ever invented can do that, without wearing out the clothes.

Our "1900 Gravity" Washer does the work so easily that a child can run it almost as well as a strong woman, and it doesn't wear the clothes, fray the edges, nor break buttons the way all other machines do.

It just drives soapy water clear through the fibers of the clothes like a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse. Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight too. Surely that is fair enough, isn't it?

Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months, in wear and tear on the clothes alone. And then it will save 50 cents to 75 cents a week over that in washwoman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 60 cents a week, send me 50 cents a week till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line to-day, and let me send you a book about the "1900 Gravity" Washer that washes clothes in six minutes.

Address me this way—H. L. Barker, 1127 Court Street, Binghamton, N. Y. If you live in Canada, address 1900 Washer Co., 355 Yonge St., Toronto, Ontario.



EARLY-ORDER CASH DISCOUNTS

Apply Here just as they
do at the Factory

As Southwestern distributors of **ROOT'S BEEKEEPERS' SUPPLIES**, we are very glad to make this first announcement of a special discount for early orders, accompanied by cash, to our beekeeping friends throughout this territory.

We give exactly the same discount that is granted by the manufacturers of these famous goods, and the prices in our special catalog are the same as their own. There is an extra saving for you in ordering from us—**FREIGHT**. Better give this your special attention before ordering from elsewhere.

THE CASH DISCOUNT ON EARLY ORDERS PLACED IN FEBRUARY IS 2 PER CENT.

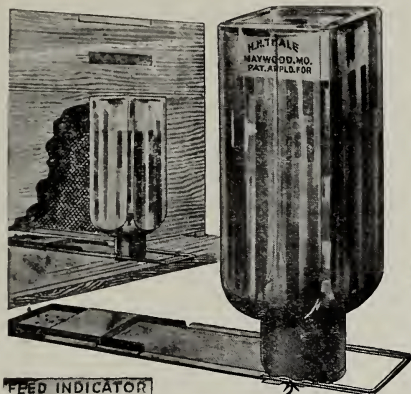
This applies to every thing in the way of beekeepers' supplies except a few special articles. On large general orders we will allow the discount on some of the excepted articles, not exceeding ten to twenty per cent of the entire order.

REMEMBER WE MANUFACTURE THE FAMOUS WEED PROCESS COMB FOUNDATION.

We have a large demand for this product, and are turning out comb foundation of the finest quality. Include what you will need for the opening of next season in your early order. Shipment may be held subject to your convenience if desired; but get your order in now and save 2 per cent.

Toepperwein & Mayfield Co.
San Antonio, Texas

Thale's Regulative Vacuum Bee-Feeder!



The New Model on Ten Days' FREE TRIAL

I will ship you as many feeders as you may want on ten days' free trial in your own apary; and if they do not work as represented you may return them at my expense, and your money will be refunded. Send for free trial offer. Address FREE TRIAL, Dept. G 194.

MOST PERFECT STIMULATIVE FEEDER ever constructed. It feeds inside underneath the cluster, and will fit any hive made. To fill feeder lift off empty bottle and set on full one. It is so regulated by the slide from the outside of the hive to feed any amount you may want the bees to have in one day. If you set it on one-half pint in one day the bottle of feed will run four days and nights and can be increased or decreased from the outside of the hive without disturbing the bees or moving the feeder. It feeds continuously, thereby imitating a natural honey flow, and will produce more brood with less cost than any other feeder made, and can be filled any time of the day without causing robbing or excitement. Queen-breeders especially can not afford to be without this feeder, as hundreds of valuable queen-cells are torn down and destroyed by the bees annually on account of improper and poor methods of feeding. With this feeder you control the flow; it feeds continuously, and will produce more cells, better cells, and the bees will not destroy any. Try this feeder. It will more than pay you. Send for feeder circular and bee-supply catalog. I carry a full line of Lewis Beeware and Dadant's Foundation. One of my Vacuum Bee Feeders complete with two bottles FREE with every ten-dollar order. Send me a list of your wants—it is no trouble to answer letters.

TERMS, CASH WITH ORDER

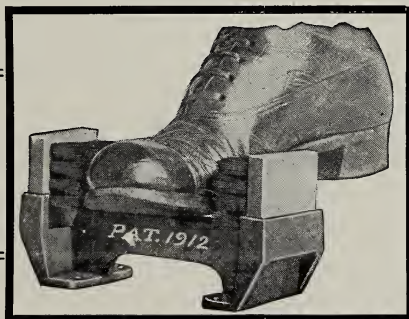
Sample Feeder, with 2 bottles complete, mail postpaid,	55c
Ten Feeders, complete with 1 bottle, freight or exp., each,	35c
All orders over ten feeders only, each,	30c
Extra bottles with cork valve, each	10c

H. H. THALE, INVENTOR AND MANUFACTURER Box 625, MAYWOOD, MISSOURI

Eastern Buyers Send Orders to Earl M. Nichols, Lyonsville, Mass.

Callender Shoe-scraper

Every House-keeper will want one



A glance at the Illustration will tell you why.

Combination Scraper and Brush

Scrapes the mud from the sole of the shoe and cleans the sides at the same time. Every housewife should have one. It will reduce her work in saving the time necessary to clean rugs and floors, which otherwise would be tracked with dust and dirt from the street.

It is made of the finest material; no screws to rust; heavily japanned. Brushes remain stationary. It is so simple that a child can change the brushes.

Every household needs one or more.

Premium Offer: We will send one of these Callender Shoe-scrapers as premium to any reader who sends us TWO NEW subscriptions to GLEANINGS IN BEE CULTURE for six months at the rate of 25 cents each.

Postage on Canadian subscriptions 15 cents additional for each trial subscription for six months.

The A. I. Root Company, Medina, Ohio

No. 28

**Planet Jr
Combined
Hill and Drill
Seeder, Wheel
Hoe, Cultivator,
Rake and
Plow**



The newest and most accurate Planet Jr seeder. Sows all garden seeds in hills or drills, opens the furrow, covers, rolls down, and marks next row all at once. Has steel frame and handles, and complete set of attachments. Light enough for woman's use.

No. 25

**Planet Jr
Combined
Hill and Drill
Seeder, Double
Wheel Hoe, Cultivator and
Plow**



A capital implement for large-scale gardening especially. It has a steel frame and complete seeding and cultivating attachments. The hoes run close to row without danger to leaves or roots. Two acres a day can be worked with this tool.

Planet Jr.

SCIENTIFIC CULTIVATION

Get away from useless drudgery and old-time wasteful cultivating methods in your family garden and on your farm. Use the Planet Jr and do the work of 3 to 6 men, better, quicker, cheaper. Planet Jrs are light, strong, lasting. \$2 to \$100. Fully guaranteed.

FREE Our new 72-page illustrated catalog of 60 implements for all farm and garden uses. Write postal today.

S. L. Allen & Co., Philadelphia Box 1106 S

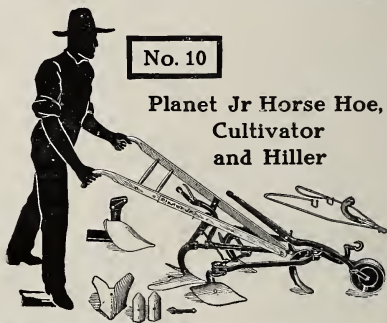
**Planet Jr
12-tooth
Harrow,
Cultivator and
Pulverizer**



An invaluable tool in the market-garden, truck and strawberry patches. Has new steel wheel which prevents clogging. Its 12 chisel-shaped teeth cut out all weeds, stir and mellow the soil and leave the ground in the finest condition without throwing dirt on plants.

No. 10

**Planet Jr Horse Hoe,
Cultivator
and Hiller**



Does more and better work than any other horse-hoe ever invented. It is light and easily handled, yet unusually strong. Has new steel wheel which prevents clogging with trash. Quickly adjusted to rows up to 3½ feet apart. Vine-turner attachment is great for many crops at last working.

No. 30

**Planet Jr
Single Wheel
Hoe, Cultivator,
Plow,
Rake and
Marker**



A new Planet Jr Single Wheel Hoe that is light, strong and practically indestructible—the frame and handles are steel. It is completely equipped for plowing, hoeing, cultivating and raking. The marking attachment insures rapid, economical wheel-hoeing.